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THE WILSON BULLETIN

A Magazine of Field Ornithology

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THE
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of Birds in the Field
and the Official Organ of the

WILSON ORNITHOLOGICAL CLUB

Edited by
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THE OLD ORNITHOLOGY AND THE NEW

BY ALTHEA R. SHERMAN

It seems necessary at the outset to define the two schools of ornithology to be discussed in this paper. The old school deals with ornithology: "That branch of natural science which investigates and treats of the form, structure, and habits of birds." Its members respect the derivation of the word, meaning to discourse about a bird, and call themselves "ornithologists." They abide by the definition quoted which states that ornithology is a science and that it investigates or studies birds; in other words, they do scientific work, following the rules for scientific research.

Various writers have been busy defining science in our scientific magazines, even in some newspapers. None of them get far beyond the dictionary's definition: that science is concerned with knowledge, with truth; meaning true knowledge, not mistaken notions, that all too often pass for knowledge and truth. In this connection may be quoted the words of Dr. Theodore W. Richards, our first native American to receive the Nobel prize in science. He wrote, "First and foremost I should emphasize the overwhelming importance of perfect sincerity and truth." To this he added, "And then patience, patience! Only by unremitting, persistent labour can a lasting outcome be reached." Clearly then truth and hard work are the exactions of science. Conformity to this requirement is the role for ornithologists of the old school. Their work is research, the spirit of their gatherings can be told in the words of Paul by the substitution of a single word: "For all the Athenians and the strangers which were there spent their time in nothing else, but either to tell, or to hear some new thing." ("About birds," are two words to be added). The old school may be divided into two classes, the professionals and the amateurs. Of the latter class William Brewster is a notable example.

The followers of the new school of ornithology far outnumber the members of the old school. They shy from using the word "ornithologists" (perhaps it is too hard for them to pronounce), and call

themselves "bird lovers"; and again they shy away from "ornithology", naming their twaddle "bird talks". They do no research work themselves, and have so slight regard for the truth about birds, that they neglect, sometimes positively refuse, to read the truths published by others. They will not take the bird magazines nor buy worthy books. One sentence fully describes them. They dabble a little in bird lore in order to gabble about birds.

The members of the new school also may be divided into two classes, the professionals and the amateurs. The professional class comprises those who are striving for fame or gain, or both; those who are panting for publicity, who imagine that they are on the road to world-wide fame by giving their "bird talks" before Women's Clubs or at gatherings of Community Clubs. As examples illustrative of this class will be taken two cases chosen from my own observations. The first place will be given to the man, who, when passing a singing bird on a telephone wire, expressed his very high appreciation of the Song Sparrow's music. When questioned, he admitted that he referred to the song of the bird on the telephone wire, and was told that it was a Dickcissel. His counterpart is found in a woman. Her story has been told once, but it so fitly illustrates this class of fame seekers that its repetition, possibly, may be pardoned. We met, and as can readily be believed I soon spoke of the exceedingly evil habits of the House Wren. She said, "I never heard of the House Wren." Following a brief description of the bird she exclaimed: "Oh, I know now what you mean! *You* call it a House Wren; I never knew that *anyone ever* called it a House Wren: *I* always call it a Jenny Wren." She is only one of the many instructors about birds who refuse to take bird magazines, who refuse also to learn the most elementary facts about birds. There are thousands of babblers like her, and how they do love to babble about birds! They are the teachers of the amateur class in the new school.

Passing now to the class who for gain lay defiling hands on the birds, quotations will be given from their writings, published in the highest class of popular magazines. The first example given was published in 1909, when magazines were paying twenty-five cents per line for poetry. One gem entitled "The Shipwrecked Sailor", reads:

"Yet he smiled
Abandoning hope and drowning unaware,
Till a great sea-bird, tern or ptarmigan
Caught by the whiteness of his lonely face
Swooped low exultantly; huge swish of wings
Measuring his body, as he struck him once.

Thud of ribbed beak, like the call to arms
Stirred the wounded soldier. . . . ."

Since 1909, when these lines won two dollars for the author, there have been the terrible shipwrecks of the Titanic and of the Vestris from which some of the victims escaped with their lives. None of them told of suffering blood-curdling attacks from ribbed beaked birds, either tern or ptarmigan, hence we must conclude that this was a rare case of the man-eating ptarmigan going to sea.

On account of the high cost of living, poetry prices mounted to a dollar per line in 1929. The quality of the outpourings seems to be about the same. Here is a sample from a poem entitled "Home":

"There shall be towels as fresh as the clover
Stored on the cedar-wood shelves down the hall,
A kitchen as white as the eggs of the plover,
And candlestick lights for the library wall."

Between the lines one may read a romance: The author, contemplating matrimony, plans a home; he is a modern youth and travels; he goes to Great Britain; he samples everything; he eats; he calls for plovers' eggs and is served with the eggs of a Bantam hen. Moreover, he is served rightly.

In sharp contrast with these nature fakes there come to mind, whenever the October leaves are falling, the lines of one who must have sat at the feet of Nature, perhaps in her very lap. They were found in a scientific magazine without a taint of money about them. Quite likely the author was a college professor who did not work for money. Except a little tautology, what fault is there in them?

"The autumn leaves are falling,
Falling, falling, everywhere.
Some are falling through the atmosphere,
And some are falling through the air."

Again wonder thrills us upon reading some of the prose effusions about nature that have been accepted and published by the highest class of popular magazines. Some of these look like a big yellow cotton patch on a blue silk dress. Now and then they contain some remarkable statements relating to ornithology which may be quoted. When snow was lying deep on the ground in Vermont a writer said she saw a Rose-breasted Grosbeak on March 12. The same magazine published the story of a November blizzard in Michigan. In it we are told that in the thickness of the storm water fowl were rushing south and among them "Swallows twittered and swept low across the water." A well-known British writer tells a story that, as a story, is an erotic, neurotic, idiotic mess, but when he lays his defaming

hands on the birds it is time for us to protest. His heroine is "twenty and loverless". She knew all the birds, she watched for the spring arrivals of cuckoo, swallow, sedge warbler, and kestrel; as they came she scattered millet for them. Her bounty halted these solely insectivorous, or flesh-eating, birds, and as they ate her millet they hopped through the lilacs and sang to her. Late one afternoon she wandered forth and met a stranger. Cupid smote both of them with his famous darts. As night deepened they sat beneath the boughs of a tree, "they heard a tiny commotion in the tree overhead; it was like the breaking of most fragile glass. He pointed through the branches to a nest. She knew what he meant; a new-born traveller was fighting his way out of the shell into the wind-swept world." What marvelous acuity of hearing had these love-lorn creatures! But their British creator evidently had failed to read Professor C. O. Whitman and to note his statement that birds' eggs do not hatch in the night, and rarely after three o'clock in the afternoon, even though the shells may be pipped; that the hatching bird has its time for sleep and like its parents it sleeps in the night.

The Reverend Dean Inge has said, "Perhaps the great struggle of the future will be between science and sentimentalism, and it is by no means certain that the right side will win." It may be that the great struggle is now taking place in regard to the birds and that the ignorant sentimentalists will seal the fate of the few birds now left to us. They comprise the vast mass of people who belong to the new school of ornithology. They are the amateurs who in their own language "*just love the birds*". They refuse to study, even to read the truth that days, months, and years of hard delving by the disciples of the old school have brought to light. To them the words, even the names, of the great leaders in ornithological science have no more meaning than they would have if quoted to a Bushman or a Hottentot. Moreover, they refuse to believe these same words, when told of them orally. By them all birds are to be loved and protected, even though they are the birds that are destroying other birds at an alarming rate.

A prolific source of information (perhaps the only source) for these amateurs of the new school seems to be the newspapers. If some of the men who supply the columns of these papers with their stories of bird life, containing "facts" unknown to scientists, have any true knowledge of birds they fail to demonstrate it. One marvels over the announcements of the results of some of their original research investigations. Among them may be mentioned the statement

that Catbirds and Brown Thrashers use mud in the construction of their nests. One of these men declares that in northeastern Iowa there has been a "ruthless slaughter of blackbirds", and he adds: "A peculiarity of this species is that the male bird comes north in the spring two weeks in advance of the female, after mating in the southland. How they find each other is one of the mysteries of bird instinct." True, indeed, the "mystery" is sufficient to hold one spellbound! But this research student of the new school of ornithology failed to tell us the name of the blackbird of his remarkable discovery, whether it is the amorous, polygamous Cowbird or that sweet singer, the Bronzed Grackle. You may be sure he emphasized the insectivorous habits of his song bird, yet he gave no hint that the "ruthless slaughter", whether of Cowbird or Bronzed Grackle, might be the means of saving hundreds of other and better insectivorous birds. There are other things besides food habits to be considered in the evaluation of birds. Some such consideration ought to have saved our birds from the introduction of their pestiferous foes, the English Sparrow and the Starling. Many years ago the Encyclopaedia Britannica under the heading "Birds" made the statement that the Starling "constantly dispossesses the Green Woodpecker." Its habits remain the same after its transplanting to America. It usurps the homes of our native woodpeckers, yet seldom is a voice raised against it. That 4,000 Starlings in Washington, D. C., and 600 in Ohio were banded, *then released*, is an offense against our woodpeckers that scarcely can be understood or forgiven.

Returning again to the choice excerpts from popular magazines for several months one of them offered numerous things new to science. The bold young man who writes these things begins by telling us about the Brown Creeper "who is a true warbler according to ornithologists" he confidently asserts. This statement was published in April, 1923. In February, 1926, another of our leading magazines shows an excellent picture of a Brown Creeper, bearing beneath it this legend, "Little Willie Woodpecker", and the text that accompanies the picture implies that under the *alias* of Willie Woodpecker the Brown Creeper is a beneficial bird. Thus it may be seen that in the short space of thirty-four months the changeling creeper metamorphosed from a warbler into a woodpecker.

Turning once more to the magazine of the bold young man, we may read of his trip taken through southern Ohio in July. He says of it: "The most conspicuous bird seen in the Ohio region was a male butcher bird or great northern shrike, along a roadside, industriously

feeding a voracious young bird of the same species." Where were all the southern Ohio ornithologists of the old school, that the noteworthy breeding of Northern Shrikes in their very midst should be left to the discovery of this young tourist? The same young man is no less interesting when he wanders into the realms of history and mammalogy. He invades my own home neighborhood, when attempting to give the origin of the name of Prairie du Chien, Wisconsin. People, having knowledge of Upper Mississippi Valley history, recall that the early French explorers found an Indian called "The Dog" living on the prairie at the mouth of the Wisconsin River and they called the locality Prairie du Chien, a name it has borne ever since. All those, having the least bit of knowledge of the prairie dog, know that the eastern boundary of its range is several hundred miles west of the Mississippi River. But our bold young man has this to say about it: "Many similar and rather absurd instances might easily be cited; notably the 'prairie dog', which, of course, isn't a 'dog' at all, but a member of the *rat* family. For that particular misnomer we probably have to thank the French settlers who so named 'Prairie du Chien' because the locality was full of 'prairie dogs' whose outward resemblance to a dog happened to be that they had four legs and a *tail*, which latter they wagged vigorously."

Time is lacking for tarrying longer with the many delightful things published by the new school of ornithology. Those quoted are treasures garnered while reading a very limited range of popular magazines. Doubtlessly wider reading would disclose thousands like them. No space for their like has ever been found in the bird magazines. Yet every week the *Literary Digest* can fill a page and the *Journal of the American Medical Association* does fill three columns with the gems that sparkle in their own special fields of knowledge.

There is no implication in the preceding pages that ornithologists of the old school never make mistakes. They would be more than supermen, if that were true. But their mistakes are not delightful and joy-giving, on the other hand they are painfully saddening. Since ornithology is a science; since the purpose of science is knowledge, truth, perfect truth, the aims of most ornithologists are to contribute to truthful, exact knowledge as far as in them lies. The purposes of science are not attained by copying old, time-worn errors, nor in neglecting to read the many truths that research workers are constantly bringing to light. The case of Professor Tweezers amply illustrates this point. He decided to publish a life history of the birds of this state, to repeat once more the many things already told

in various state histories, which have appeared in ponderous forms of one to four volumes. Since it is utterly impossible for one man to have thorough, first-hand knowledge of the habits of all the birds of one state he was obliged to draw very largely from previous publications. But to make his book salable and to give it an appearance of original research he invited aid from his neighbors, from the Sam Smiths of Hazelbush Hollow, and the Mary Joneses of Metropolisville, whose observations as quoted are no better than scores of similar ones already published. All this is according to custom and quite justifiable. It is when Tweezers publishes ancient errors, adds some of his own, and refuses to read numerous life histories, that others have published, that he becomes reprehensible. Well might he be arrested for "cruelty to animals" when he hustles callow Purple Martins out of their nest, when the duration of the nest period is but half completed, when the quills of their wing-feathers have not yet burst. His untruths about this species might more readily be pardoned if Dr. Brownesque and several others had not given him the correct data.

Professor Tweezers is not alone in his bookmaking projects, there are several other members of his family. Some of these Tweezers would refuse to change the figures you have placed on a bank check, but they do not hesitate to mutilate the correct figures you have given in a bird history. There is a certain Tweezers who showed his masculine strength by slashing off a half day from the incubation period given for one bird. It is strange that he did not show his superiority in a bolder, braver, more heroic way by slashing off a whole day. So far as respect for truth is concerned five or ten days might have been cut off with equal reason. If science seeks knowledge and truth, there ought to be protest against those Tweezers who seize upon the outcome of days, weeks, or months of hard work done by others, only to mutilate it or to turn and twist it to suit their own ignorance or prejudice.

To emphasize the injustice they do both to truth and to bird students I take one example selected from my own experience. I had made as careful study of nesting Sparrow Hawks as I could and it was published in the *Auk*. It seemed to please one of the Tweezers, the reason soon became apparent: he needed it to use in his book. He used it, giving my name and paraphrasing the whole nest history. To that no one could object, if he had not inserted a downright, inexcusable falsehood. He said that I wrote that these hawks fed their nestlings "insects". And there that lie will stand as long as the writings of this particular Tweezers shall endure. To some people this

may appear a small matter. It is not. Besides being a gratuitous untruth, it suggests a habit that is beyond credibility. Besides never seeing it done, two seasons of close study of nesting Sparrow Hawks lead me to believe that no mother hawk of this species would be willing to approach the nest carrying insect food.

The case just cited calls to mind another class of people that may be mentioned: They are "half-castes" or hybrids between the old school and the new school of ornithology. With a smattering knowledge of a few birds they are busy trying to whitewash the reputations of certain birds proved to be bad. While they deify a bird they are at great pains to damn the characters of the people who have made known its evil habits. They forget that time is long; that after them will come bird students and ornithologists who will recognize the truth and forcibly denounce the errors and untruths in which these mongrel "half-castes" delight to revel.

National, via McGregor, Iowa.

THE NESTING WRENS OF BROOKE COUNTY, WEST VIRGINIA

BY GEORGE MIKSCH SUTTON

Illustrated with three halftone drawings by the author.

During the past fifteen years three species of the family Troglodytidae have been known to nest in the vicinity of Bethany, Brooke County, West Virginia. The Carolina Wren (*Thryothorus ludovicianus ludovicianus*)[1] is certainly the most noticeable of the three because it lives the year round near towns and farms, its loud, brilliant song is to be heard at virtually all seasons, and its size and dominant personality attract attention everywhere. The summer resident House Wren (*Troglodytes aedon aedon*),[1] while not so widely distributed, nor actually so common, is perhaps better or more accurately known, partly because of its ready acceptance of nesting-boxes erected for it, and partly because the average person can identify "Jenny" Wren without much difficulty. The Bewick's Wren (*Thryomanes bewicki bewicki*)[1] is very rare, has never nested about the towns so far as I know, and is unknown among the people of the countryside where it should occur. The Bewick's Wren may be a permanent resident wherever it is found in this latitude. The fluctuation in the wren population in Brooke County has greatly interested me.

[1]Specimens have been collected and compared for determination of the subspecific form.

Carolina Wren

When we first came to Brooke County in July, 1914, the Carolina Wren was fairly common about Bethany. Their loud songs were to be heard all about the village as well as in the wooded ravines nearby. On July 24, 1914, I found a brood of young birds just leaving their nest which was situated among the exposed roots of a walnut tree. During the following winter the species was observed daily. It came regularly to the feeding counters where it was especially fond of black walnut meats. One individual became so tame that it would feed from the hand, and a pair of birds which lived about the house customarily awakened me with their chatter while I was sleeping-out on the open back porch. (See Annotated List of the Birds of Brooke County, West Virginia, *Oologist*, Vol. XXXVII, July, 1920, 77-78).

During 1915 several nests were found, one, containing two fresh eggs, in mid-fall! This nest may have been deserted considerably earlier in the season. During 1916 I found several nests and collected sets of five eggs on April 14 (well incubated) and on May 24 (fresh). The bulky nests were found as a rule in out-buildings, and none was found in the woods far from a human dwelling. One nest was built on a rumpled paper sack which lay on a shelf in a woodshed. So neatly had the nest been built that its roughest foundational material nowhere protruded beyond the edges of the paper. The birds, in coming to their nest, seemed to enjoy the crisp sounds their feet made on the dry paper.

Another nest was built into a space between rafters under the roof of a low, well shaded front porch. Here the sheltered cavity was completely filled with leaves and rubbish which had been dragged in with much ado from all directions. The owners of this house stated that the wrens had nested there for years. The nest proper, however, was obviously new.

A nest found in 1917 was built into the corner of a large dry-goods box which had been nailed to the shadowy back of a barn which stood at the edge of a woodlot about two miles from town. Here, where the birds had chosen a cavity obviously too large to fill, both male and female and brought great quantities of nest material; nevertheless the structure was neat. In front of the nest proper was a crude path of weed-stalks and leaves possibly eighteen inches in length. The entire nest with its approach could be lifted easily, so skilfully were the stalks and leaf stems interwoven.

During 1918, 1919, and 1920, I noted, though I was unable to make careful observations throughout the year, that this wren was

THE CAROLINA WREN (Life Size)

disappearing. During the winter of 1918 and the following spring we did not record the species at all. We were, at first, completely mystified, though we were glad enough to note during May, 1919, that House Wrens were for the first time nesting in the village!

It is difficult to determine the factors which caused the Carolina Wren to retire and the House Wren suddenly to appear. It would seem that the larger Carolina Wren could certainly oust the House Wren at will without much trouble. Is it not possible that the House Wren, eager to extend its range wherever possible, as soon as the larger wren for some reason disappeared, watched for its opportunity to come in and establish itself?

If the House Wren in this region is as vandalistic as it is elsewhere (and there is no reason for supposing that it isn't), then it would seem probable that the Carolina Wren must come in for its share of trouble just as does the Bewick's Wren. The fact that at the present time the Carolina Wren is abundant again, and the House Wren present in considerable numbers in exactly the same territory convinces me, however, that it is possible for these two species to live together without constant friction; and also that, in explaining the disappearance of the Carolina Wren in 1918, 1919, and 1920, we must seek for other causes than the mere advent of the House Wren.

I have observed no tendency on the part of the Carolina Wren to disturb nests of the House Wren or, for that matter, of any other species of bird; nor have I observed any instance of molestation of a Carolina Wren's nest by a House Wren. The relationship between these species is evidently much more satisfactory than between the House Wren and Bewick's Wren, wherein the latter species usually suffers and retreats.

During recent years Carolina Wrens have been more abundant here than at any time within the period of my West Virginia experience. One or more pairs are to be seen or heard at almost any time in the yard. On June 10, 1929, I examined a nest containing five well incubated eggs which had been built on the open top of a chiffonier in a little-used bedroom at a neighbor's house where a window was customarily left open. Here the incubating parent was remarkably tame or brave and permitted considerable intimacy.

The odd vocal duet often given by these birds is amusing. The male, quivering as he hurls out his dominant "chee-whee-dle, chee-whee-dle, chee-whee-dle" or "which jailer, which jailer, which jailer?", lifts his head and drops his tail; usually just before this song outburst is concluded the female gives a long, harsh, scolding call which

sounds very much as though she disapproved in some way of the noisiness of her mate.

House Wren

It is impossible, from the meagre data at hand, to account for the absence of the well-night ubiquitous House Wren at Bethany during

The House Wren (Life Size)

the years 1914-1918. It appears offhand, however, that the abundance of the resident Carolina Wren, whose entire population was on hand and, as a rule, nesting, by the time the spring migrant House Wren

arrived, actually might have kept the smaller species from attempting to establish itself. In the spring of 1919, however, when the House Wrens appeared here, they encountered no Carolina Wrens and began nesting at once. In the light of present knowledge concerning the constancy of individual pairs of certain species in nesting within a well defined area we may suppose that these newly arrived House Wrens were year-old birds perhaps seeking their first nesting-site.

There is little conflict between the two species as to nesting-site, of course. The House Wren is a much smaller bird, which prefers to nest in cavities in trees or in nesting boxes. The Carolina Wren prefers lower, darker, and more spacious situations. The House Wren might be a worse enemy of its larger relation than it is were it given to spending more of its time in the shadowy retreats which the Carolina Wren prefers to frequent.

House Wrens now nest in a deserted Downy Woodpecker nest in our yard,[2] while the Carolina Wrens live peacefully in neighbors' outhouses not more than three hundred yards away. The local House Wren population has not increased greatly since 1919, there being only about a dozen pairs of the birds in the village and its environs.

If the Carolina Wren disappeared in 1914 before the House Wren came it is obvious that food supply, natural tendency to wander, or overabundance of some natural enemy caused the disappearance of the larger bird, whereas the coming of the House Wren really had nothing to do with it.

Bewick's Wren

During the summer of 1921 a pair of these birds[3] attempted to establish themselves at a farm between Bethany and the nearby village of West Liberty. The nest was not discovered and we do not know that a brood was reared. During the following summer none was to be found, though House Wrens, in usual numbers, were found in nearby orchards and Carolina Wrens were common in the vicinity.

It is natural to lay the blame upon the House Wren though it is possible that the Carolina Wren should assume some of the censure. According to my experience in Huntingdon County, Pennsylvania, and that of Mr. Samuel S. Dickey in Greene County, Pennsylvania, I should say that the actual nesting territories of the Carolina and Bewick's Wrens insofar as ideal nesting-sites are concerned, overlap more than do those of the Bewick's Wren and House Wren; so that if either

[2]We have not erected any nesting-boxes on our place; but all dead trees are preserved for cavity-nesting species.

[3]Apparently unmated individuals have been noted twice.

wren is responsible for ousting the Bewick's Wren in this region it may be the Carolina Wren. The Bewick's Wren seems to be an altogether inoffensive, rather unobtrusive creature though I confess I

BEWICK'S WREN (Life Size)

do not know the bird's personality very well since I have not had opportunity to observe it for long periods at a time.

CONCLUSIONS

1. The disappearance of the Carolina Wren during the years 1918-1921 can hardly be laid against the House Wren. Unless inadequate food supply or natural tendency toward wandering is respon-

sible, I should say that over-abundance of some natural enemy was the cause. House cats may have been responsible. Hawks and owls certainly were not, for they have been very rare in this region for years. Black snakes and house snakes may have had a good deal to do with the matter for they are abundant hereabouts and they frequent such situations as are chosen by the Carolina Wren as nesting sites.

2. The House Wren and Carolina Wren may inhabit precisely the same region without friction; but the House Wren and Bewick's Wren, or the Bewick's Wren and Carolina Wren, or all these species, evidently do not. Ecologically speaking the vicinity of Bethany appears to be ideal for the Bewick's Wren, save for the presence of the other two nesting species of the family Troglodytidae.

Bethany, W. Va.

THE FALL MIGRATION OF MOURNING DOVES

BY WILLIAM BREWSTER TABER, JR.

At the suggestion of Mr. Samuel E. Perkins III, I have undertaken the interpretation of migration data of the Mourning Dove, (*Zenaidura macroura*) as revealed by the bird banding method. At the outset I should like to point out that there will be developed theories which these data seem to warrant, and that although the data are apparently sufficiently voluminous to warrant the deduction and statement of these theories, it should be understood that until several more years have elapsed and many hundreds more of doves have been banded it cannot be definitely known that any one of these theories always fits the facts. The method of modern science may be divided into three parts; first, the accumulation of data; second, the statement of the significance of these data; and third, the proof of the theories illustrating this significance by experiment or by the further accumulation of data. It is with the first two parts of the scientific method that this paper deals. Whether or not several of the theories herein developed will be tenable after further evidence is accumulated it remains for the future to disclose.

It is pertinent here to say that the true scientist, ever a seeker of truth, cannot expect a statement of theory or fact to disclose its entire significance. Knowledge of any subject can never be consummated nor final, for as new truths are discovered and new methods of investigation devised, the light of scientific research casts ever changing shadows whose depths must be carefully plumbed, and discovers to the gaze of seekers new high lights of truth, thus throwing an entirely different

perspective upon the matter. One of our greatest naturalists has related that scarcely one of the theories he formed at first has withstood the tests of time.[1]

However, it is clear that the time has come when much of the knowledge of migration as disclosed by the bird banding method should be publicly stated and discussed. After eight consecutive years of extensive effort on the part of hundreds of banders surely much information has been obtained worthy of publication. It is to help fulfill this need that this paper has been written.

The subject of the *fall* migration of Mourning Doves has been taken simply because the banding method has only given returns for this particular migration. There are no data of the northward spring migration since the few returns for doves banded during the winter months in the south were made at or near the stations where the bands were placed. The abundance of data on the fall migration contrasted with the complete lack of data upon the spring is due to the hunting propensities of the people of the southern states. Although doves are classed as game birds in all localities they are hunted extensively only in the southern states. If it were not that they are game birds the return data would have been too meager to warrant any deductions.

In Figure 1 there is given a graphic representation of the migrating flights of doves, which includes all returns reported to the Bureau of Biological Survey by March 26, 1928. In order to show the trend of flight to different localities lines were drawn connecting the spots representing the banding stations in the north to the spots representing the localities in the south where each bird was retaken. When examining this map it should be borne in mind that not all of the flights represented are necessarily direct, that is in several cases one or more migration seasons may have intervened between the times of banding and recapture. Thus one dove banded at Kansas, Illinois, in May, 1924, was recaptured at Moultrie, Georgia, in January, 1926, after the lapse of two fall migration seasons. Such an occurrence, however, is the exception rather than the rule, for over sixty per cent of all the recaptures were made after only one fall migration season had elapsed. (See Table I). It must also be realized that the spots representing the banding stations do not show the nesting locations of many of these birds. Since a considerable number were trapped during the fall or spring migrations, many of them were caught while actually in

[1]Charles Darwin's Autobiography, "Little Masterpieces of Autobiography," Volume 2, page 58.

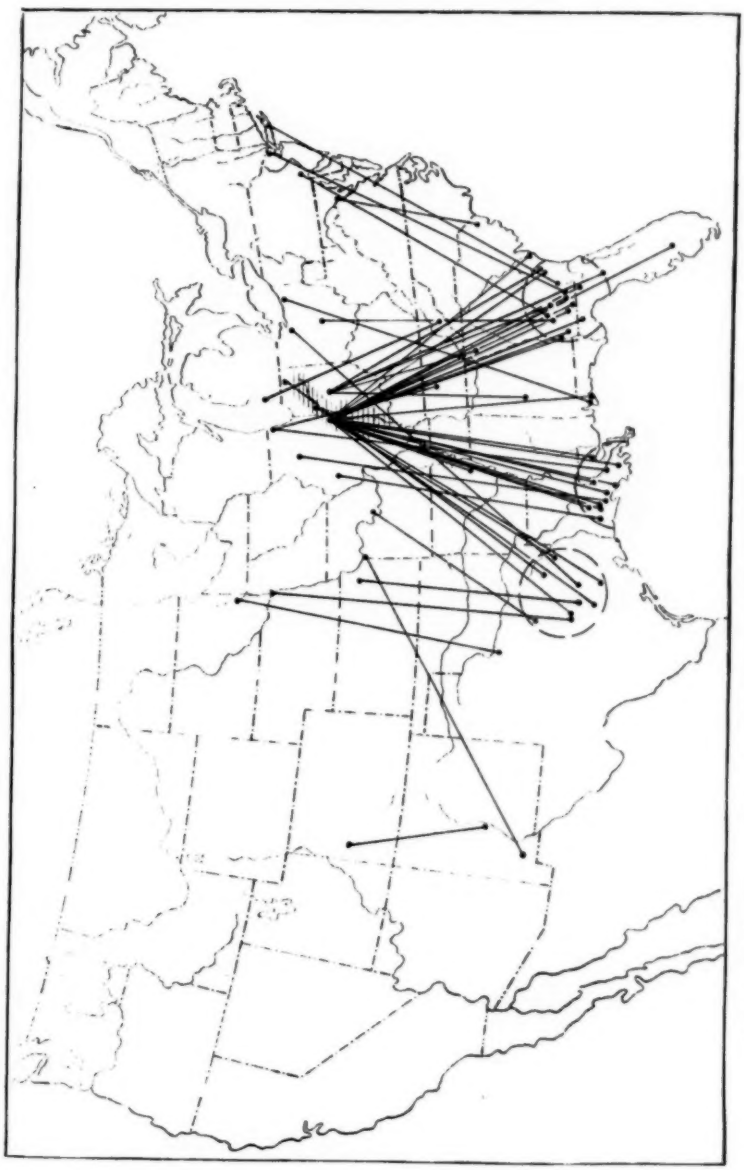

Fig. 1. Diagram to show the locations of banding and recovery of Mourning Doves.

the process of migration to or from their nesting locality, which in some cases, was undoubtedly considerable distances farther north.

Examination of the map at once shows that there are apparently three distinct areas in which doves concentrate for the winter. These areas are in the order of intensity of concentration, southern Georgia and northern Florida, southern Louisiana, and northeastern Texas. There may be three possible reasons for this *apparent* concentration, as follows:

1. That there is an actual concentration of doves in these localities.
2. That Mourning Dove hunting is more intense in these localities.
3. That dove hunting is more intense in these localities because of the concentration of doves there.

The third reason seems the more likely. Personally I have had no experience in the matter, never having been in the southern states. However, Mr. F. C. Lincoln has written me of his experiences concerning the wintering of doves in southern Georgia. He says, "Doves are extremely abundant at that season, particularly in the southern and southeastern parts of the state."

The map also shows that there is a boundary which determines the concentration areas to which doves migrate. This boundary is the Wabash River Valley, shown cross hatched. All birds trapped at points east or southeasterly of the Wabash River Valley migrate to the Georgia concentration area or its vicinity. Those nesting in or migrating through the Wabash River Valley migrate to any of the three concentration areas. Those trapped west of the Wabash River Valley migrate only to Louisiana or Texas. It would be absurd to state that never does a dove violate these rules, but nevertheless the data certainly indicate that in the majority of cases the Wabash River Valley serves as a boundary line for the fall migration.

Although the lines on this map connecting the points of trapping and the points of recapture have been drawn straight, it is an entirely unwarranted presupposition that the migration flight of any individual is in a straight line. There must be more or less wandering from one side to the other of the direct course to the point of destination. We have at present no information concerning the peregrinations of doves on their migratory flights. Nevertheless, it is evident from Figure 1 that mountain ranges form barriers which are not commonly crossed. Those birds trapped in Ohio, Indiana, and Illinois, and which were recaptured in southeastern Georgia either skirted the southern end of

the Unaka and Great Smoky Mountains or made their way through the valleys and the passes where the altitude is not great. The two doves recaptured in New Mexico also show the tendency to avoid high altitudes.

Table II gives data showing the relative times at which doves first arrive in the several concentration areas. Although it cannot be definitely said that the first migratory doves arrive at a particular concentration area upon a certain date, an average date of the earliest recaptures for a given number of doves in each area will indicate which areas are occupied first, and approximately how much earlier one area is occupied than another. The average date of recapture of the first eight doves in each area was Texas, October 16, Louisiana, November 15, and Georgia, December 6. As several of these eight birds recaptured in each area either originated in or passed through the Wabash River Valley, it is interesting to note the respective distances from Kansas, Illinois, a central point in the Wabash River Valley, to the three concentration areas. These straight line distances are approximately, to Texas, 750 miles, to Louisiana, 650 miles, to Georgia, 620 miles. It will be noted that although the distance flown to the Texas concentration area is greater than to the other two, the Texas concentration area is occupied the earliest. Three possible reasons can be given for this phenomenon:

1. The first migrants to leave the nesting locality fly to Texas.
2. The migrants to Texas fly more rapidly.
3. The earliest migrants fly to Texas and they also fly more rapidly.

In considering this matter it would be well to examine the game laws which determine the hunting seasons of these three areas and discern whether or not these data are vitiated by this artificial factor. At the time in which these data were secured, the open season for doves in that portion of Texas in which all the recaptures were made was from September 1 to December 15; in Louisiana, from November 1 to January 31; in Georgia and northern Florida from October 16 to January 31.[2] It should be noted that although the hunting season in Texas opened September 1, only two of the first eight recaptures occurred in September, while the majority occurred in October. In Louisiana all of the first eight recaptures occurred in the first month of open season. In Georgia and northern Florida not one of the first

[2]Migratory Bird Treaty Act.

eight recaptures occurred within the first month of open season. It is plain, therefore, that in Texas and Georgia the hunting season did not affect the times at which the first eight doves in each area were retaken, for the majority of recaptures were made after the season had been open for a considerable time. In Louisiana the hunting season may have influenced the time of recapture. If the open season had determined the dates upon which the earliest birds were recaptured, we would have found that these earliest recaptures were bunched into the first few days of the open season. In the Texas and Georgia areas this was certainly not so.

In order to be able to judge of how rapidly the migration southward progresses some idea of when migration commences at a northerly latitude must be ascertained. This date for Kansas, Illinois,

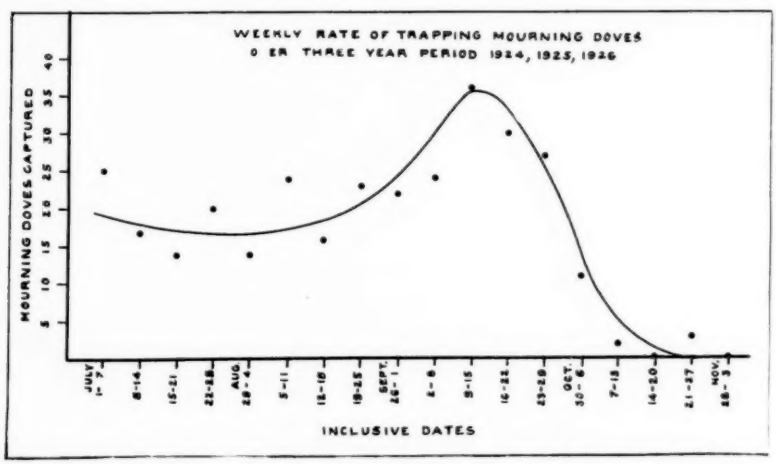

FIG. 2. Graph indicating the number of trapped and banded Mourning Doves in the fall season; which also serves as a measure of the intensity of migratory movement.

which is situated in the east central portion of the state, may be determined since here I have banded a sufficient number of doves over a period of three years to enable reliable deductions to be made. In Figure 2 there is graphically shown the totals of three years of dove trapping week by week beginning with July 1, and ending November 3.[3] All doves including repeats and returns have been counted. In all three years neither the number nor style nor location of traps was changed during any one season; and except for a few interruptions

[3]Data for this curve are shown in Table 3.

of two or three days extent the trapping was continuous. It can be seen from the average smooth curve line drawn among the points representing the total weekly catch over the three year period, that the intensity of trapping gradually decreases up until about August 1, then slowly increases until August 20, from that date increasing ever more rapidly until a sudden high peak is reached the second week in September. From then on the intensity of trapping rapidly decreases until by the early weeks of October scarcely any doves are caught. This intensity of trapping is an excellent measure of the intensity of migration. This is evident during the spring migration as well as during the fall migration. This curve shows that at Kansas by August 20, migration has sensibly begun, reaches its peak of intensity by the second week of September, and except for a few tardy birds is practically complete by October 1.

When attacking the problem of speed of migratory flight the banding method offers no positive evidence, for one can never be sure that any particular individual commences its migratory flight as soon as released from the banding station nor that it is recaptured immediately upon its arrival at its winter quarters. However, if all the available evidence is brought to bear upon the subject and the matter is approached from several different standpoints each method of approach giving approximately the same result, we may be reasonably certain that our results are not far from the truth.

Let us first consider the time of departure of the earliest migrants from Kansas, Illinois, and the times of arrival of the earliest doves at the three concentration areas. Table IV gives the data in concise form.

If now we investigate the speeds developed by individuals in their migratory flights there are two cases in which less than seventy days elapsed between the time of trapping and the date of recovery. Neither of these two repeated so the date of banding is the date on which they were free to migrate. Table V gives the complete data.

The average rate of travel 9.4 and 9.3 miles per day is the *minimum* rate of travel for each bird. It is quite possible that they actually traveled faster than this, but it is not likely that they greatly exceeded this speed for these are the two fastest rates of travel which the banding data afford.

Dove number 19008 gives additional evidence. Since this dove had been banded in June of the same year and was at Nashville, Tennessee, on September 28, it was on its migratory flight. If it had been free to continue its journey the additional 350 miles to southern Georgia and had traveled at the average rate of 10 miles per day, it

would have arrived November 2, and would have been among the earliest arrivals. Consequently it could not be expected that this rate of travel would have been much exceeded.

There is one more angle from which to look at the subject. Since it is based greatly upon conjecture it would have little weight of itself, but in connection with the circumstantial evidence already given it seems worthwhile mentioning. If it is assumed that the very last migrants of the season which pass through Kansas, Illinois, come from the northern extremity of the nesting range and that they begin their migration about August 20 and travel at an average rate of 12 miles per day, then since the last few scattered flocks of migrants have been observed to pass Kansas, Illinois, about November 1, or 70 days later, it would be expected that the northern extremity of the nesting range is about 850 miles farther north or at about 52° latitude. This, I believe, is the case.

To sum up all this evidence, which is purely circumstantial and none of it demonstrative, it seems quite certain that Mourning Doves migrate in the fall at an average rate of from about 6 to 13 miles per day. It also seems highly improbable that this rate is exceeded by much.

This slow rate of migration is in marked contrast to the strong rapid flight of Mourning Doves which often exceeds 35 or 40 miles an hour. Since only a part of a day of continuous flight would enable doves to traverse the greater part of the distance to their winter quarters, it must be that after a very few hours of migratory flight flocks will dally near one locality for several days or even weeks before resuming their southward course.

Cooke states that the average rate of migratory flight of all birds is approximately 23 miles per day.[4] His paper does not mention Mourning Doves. But then it is quite possible that at the date of that publication (1915) it was not known that Mourning Doves migrated. This seems to have been a point not accepted by all ornithologists.[5] At any rate the habits of doves are such that Cooke's methods of investigation could have yielded little information upon their migration, since they are more or less resident all the year around over at least most of their range and there are no distinguishing marks between the migrants and non-migrants.

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[4]Bird Migration, by Wells W. Cooke, Bul. 185, U. S. Dept. of Agriculture, page 45.

[5]Bird Banding in America, by F. C. Lincoln, Smithsonian Report, 1927, page 345.

Bird banding returns yield a little information about non-migrants. There are two returns of doves recaptured in the winter at or near the northern banding station in which they were originally caught. Number 319212 was banded by Mr. Perkins in the nest as a fledgling September 6, at Indianapolis. It was recaptured near Indianapolis the 29th of the following December. Dove number 283786 was trapped at Kansas, Illinois, in immature plumage October 6, and was killed by flying into a locomotive on the 31st of the following December at Hutsonville, Illinois, only thirty miles south. Here are two instances of individuals remaining at or near their summer quarters as winter residents. That they were both immature birds cannot, until additional data are secured, have any significance, for these two instances are insufficient evidence to warrant any deductions. We merely know that sometimes immature doves do not migrate.

Summary

In summarizing this paper the following points may be briefly stated:

Mourning Doves migrate.

In winter migrants from the north concentrate in three areas close to the Gulf of Mexico; namely, southeastern Georgia and northern Florida, southern Louisiana, and northeastern Texas.

The concentration of doves in these areas is greatest in the Georgia area, then Louisiana, then Texas.

The earliest migrants arrive first in the Texas area, then Louisiana, and finally in the Georgia area.

The earliest migrants arrive in noticeable numbers in the Texas area almost two months before the Georgia area is occupied in considerable numbers.

The Wabash River Valley is a boundary line determining to which area doves migrate.

Doves nesting east and southeast of the Wabash River Valley migrate only to Georgia.

Doves nesting in or migrating through the Wabash River Valley migrate to any of the areas.

Doves nesting west of the Wabash River Valley migrate to Louisiana or Texas.

The speed of doves on the fall migration flight varies from about 6 to 13 miles per day.

Migrants to the more distant Texas area fly more rapidly than migrants to the nearer Georgia area.

TABLE I

Foreign Mourning Dove returns up to March 26, 1928.

Banding Locality	Band No.	Date of Banding	Date of Recovery	Locality of Recovery
Colo., Grand Junct...	9793	Aug. 28, 1923	Sept. 5, 192(	N. Mex., Zia
D. C., Washington....	110743	July 25, 1924	Nov. 19, 1927	S. C., Conway
Ill., Clayton	440569	July 22, 1926	Nov. 6, 1926	La., Lake Charles
Ill., Kansas	287598	June 30, 1925	Sept. 22, 1927	Ala., Easonville
Ill., Kansas	287631	Aug. 11, 1025	Jan. 21, 1926	Ala., Perdido Beach
Ill., Kansas	440631	June 5, 1926	Dec. 9, 1926	Ark., Forrest City
Ill., Kansas	440646	June 25, 1926	Jan. 19, 1928	Fla., Jasper
Ill., Kansas	275206	Sept. 21, 1923	Nov. 29, 1923	Fla., Tallahassee
Ill., Kansas	315832	July 3, 1924	Dec. 6, 1925	Fla., Wauchula
Ill., Kansas	440672	July 12, 1926	Dec. 17, 1926	Ga., Baxley
Ill., Kansas	315801	June 16, 1924	Dec. 24, 1924	Ga., Brooks County
Ill., Kansas	283864	Apr. 22, 1925	Jan. 15, 1926	Ga., Donalsonville
Ill., Kansas	287635	Aug. 12, 1925	Nov. 24, 1927	Ga., Ft. Gaines
Ill., Kansas	314061	May 22, 1924	Jan. 29, 1926	Ga., Moultrie
Ill., Kansas	315837	July 5, 1924	Jan. 1, 1926	Ga., Savannah
Ill., Kansas	281741	Aug. 18, 1924	Feb. 9, 1925	Ga., Valdosta*
Ill., Kansas	281702	July 24, 1924	Dec. 22, 1924	La., Cataro
Ill., Kansas	287635	Aug. 12, 1925	Nov. 24, 1927	La., Iberia Beach
Ill., Kansas	283883	May 3, 1925	Jan. 13, 1926	La., Mandeville
Ill., Kansas	281715	Aug. 5, 1924	Nov. 27, 1924	La., Midland
Ill., Kansas	440603	June 1, 1926	Nov. 15, 1926	La., Milton
Ill., Kansas	287584	June 19, 1925	Nov. 15, 1926	La., Morgan City
Ill., Kansas	274615	Sept. 1, 1923	Nov. 8, 1923	La., New Roads
Ill., Kansas	442354	May 23, 1927	Nov. 8, 1927	La., Ridge
Ill., Kansas	287579	June 16, 1925	Oct. 31, 1925	Texas, Brenham
Ill., Kansas	287654	Sept. 14, 1925	Dec. 29, 1927	Texas, San Augustine Co.
Ill., Kansas	361938	Apr. 25, 1926	Oct. 20, 1927	Texas, Waco
Ill., Ohio.....	374892	June 2, 1926	Nov. 16, 1926	La., Vermillion Parish
Ill., Waukegan	359172	Apr. 29, 1927	Jan. 26, 1928	La., Belle Rose
Ill., Waukegan	19008	June 18, 1921	Sept. 28, 1921	Tenn., Nashville
Ind., Goshen	463609	June 12, 1926	Jan. 13, 1928	Texas, Chandler
Ind., Indianapolis	1011[illegible]	June 19, 1922	Nov. 25, 1922	Ala., Marion
Ind., Indianapolis	283498	June 5, 1925	Nov. 26, 1925	Fla., Gainesville
Ind., Indianapolis	547002	June 15, 1927	Dec. 20, 1927	Ga., Baxley
Ind., Indianapolis	546928	June 23, 1927	Jan. 22, 1928	Ga., Curryville
Ind., Indianapolis	218942	May 25, 1924	Dec. 25, 1924	Ga., Doerun
Ind., West Lafayette	284059	Apr. 19, 1925	Oct. 14, 1925	Texas, Cameron
Iowa, Sioux City.....	288041	July 16, 1925	Sept. 24, 1927	Texas, Waco
Kans., Kansas City..	441014	June 20, 1927	Sept. 17, 1927	N. Mex., Luna Co.
Kans., Mayetta	339492	Aug. 3, 1926	Oct. 14, 1927	Texas, Falls Co.
Mich., South Haven	314026	June 10, 1924	Dec. 2, 1927	Tenn., Hubbard
Mo., Columbia	266941	June ....., 1924	Sept. 10, 1926	Texas, Fort Worth
N. J., Montclair.....	275327	May 26, 1925	Dec. 24, 1925	Ga., Howell
N. Y., Mastic.....	57969	July 22, 1923	Dec. 15, 1923	Ga., Homerville*
Ohio, Columbus	398616	July 7, 1926	Dec. 1, 1926	Ga., Dougherty Co.*
Ohio, Gates Mills.....	206104	Aug. 18, 1927	Oct. 29, 1927	Ala., Foley
Ohio, Tiffin	360371	Aug. 15, 1925	Nov. 28, 1925	Texas, Marquez
Pa., Newtown Squ're	42829	May 31, 1920	Jan. 28, 1921	Ga., Albany
S. D., Dell Rapids....	374075	June 3, 1926	Oct. 6, 1927	Texas, Wichita Falls

*Date of recovery approximate.

For a list of all dove returns, both domestic and foreign, up to January 1, 1927, *see* Returns from Banded Birds, 1920 to 1923, Dept. Bull. No. 1268, *and* Returns from Banded Birds, 1923 to 1926, Technical Bull. No. 32, U. S. Dept. of Agriculture.

TABLE II

Dates of recovery of first eight migratory Mourning Doves recaptured in each concentration area.

TEXAS AREA		LOUISIANA AREA		GEORGIA & NORTHERN FLORIDA AREA	
Number	Date of Recovery	Number	Date of Recovery	Number	Date of Recovery
266941	Sept. 10	440569	Nov. 6	287635	Nov. 24
288041	Sept. 24	274615	Nov. 8	283498	Nov. 26
374075	Oct. 6	442354	Nov. 8	275206	Nov. 29
339492	Oct. 14	440603	Nov. 15	398616	Dec. 1
284059	Oct. 14	287584	Nov. 15	315832	Dec. 6
361938	Oct. 20	374892	Nov. 16	57969	Dec. 15
287579	Oct. 31	287635	Nov. 24	440672	Dec. 17
360371	Nov. 28	281715	Nov. 27	547002	Dec. 20
Average	Oct. 15	Average	Nov. 15	Average	Dec. 6

TABLE III

Weekly rate of trapping Mourning Doves during summer and fall over a three year period, 1924, 1925, 1926, at Kansas Illinois.

Date	Number of Doves Trapped	Date	Number of Doves Trapped	Date	Number of Doves Trapped
July 1-7	25	Aug. 12-18	16	Sept. 23-29	27
July 8-14	17	Aug. 19-25	23	Sept. 30-Oct. 6	11
July 15-21	14	Aug. 26-Sep. 1	22	Oct. 7-13	2
July 22-28	20	Sept. 2-8	24	Oct. 14-20	0
July 29-Aug. 4	14	Sept. 9-15	36	Oct. 21-27	3
Aug. 5-11	24	Sept. 16-22	30	Oct. 28-Nov. 3	0

TABLE IV

Rate of migratory flight to the three concentration areas.

Area of concentration	Earliest date of departure Kansas, Ill.	Average date of 8 earliest recoveries at concentration areas	Days elapsed	Distance traveled in miles	Average miles per day
Texas	August 20	October 15	56	750	13.4
Louisiana	August 20	November 15	87	650	7.5
Georgia	August 20	December 6	108	620	5.7

TABLE V

Rate of migratory flight of individual doves.

Band No.	Banding station	Date of banding	Point of recapture	Date of recapture	Miles traveled	Days Elapsed	Avg. miles per day
275206	Kansas, Ill.	Sept. 21	Tallahassee, Fla.	Nov. 29	650	69	9.4
274615	Kansas, Ill.	Sept. 1	New Roads, La.	No. 8	630	68	9.3

Mountain ranges form barriers to the migratory flights of doves.

Some immature doves do not migrate the first winter.

If we stop to consider the relationship of this study to the study of bird migration in general, we find that it adds nothing of importance to what was already known.[6] We find that it tells us nothing new of the *modus operandi* of migratory flight, nor does it clarify our understanding of its causes. Migration is still as much of a mystery as ever. However, through the application of the bird banding method some detailed knowledge of the migration of a species, which from its own peculiar habits renders it impossible to study by any other method yet devised, has been secured.

KANSAS. ILLINOIS.

NESTING OF THE WHITE-WINGED JUNCO IN THE BLACK HILLS OF SOUTH DAKOTA

BY W. H. OVER AND G. M. CLEMENT*

During July and August of 1924, while collecting plants along the highway (No. 83) above Pactola in the Black Hills of South Dakota, Mr. Over observed numerous young and adults of the White-winged Junco (*Junco aikeni*). These birds were particularly abundant near a sawmill, and around a barn where horses were kept, feeding on wasted grain, etc. Upon inquiry he learned that they were reared earlier in the season in the immediate vicinity. Search also revealed several old nests, one on a horizontal 2x4 piece of timber bracing the wall and not six feet from the man who took the boards from the saw. Another nest rested on a timber under the floor and just beneath the saw. The band that ran the sawdust-carrier passed day after day within six inches of this nest. Several employees at the mill bore testimony to the fact that young birds were reared in each of these nests. Two other old nests were found, one in the mill, and another on a rafter plate of the roof of the blacksmith shop, nine feet above the ground and in almost the exact spot where in two succeeding seasons Mr. Clement found occupied nests of this species.

During the holiday season of 1924-25 Mr. Over spent a few days in the locality, and found many of these Juncos present and feeding daily around the buildings. They readily responded to an invitation to visit a hastily improvised feed box where crumbs and cracked nut-

[6]See Problems of Bird Migration, by A. Landsborough Thompson, Chap. XVI.

*This paper has been prepared by Mr. Over, but the material is taken largely from the field notes by Mr. Clement. Efforts made in 1928 by Mr. Clement to photograph the nests and birds were not successful.

kernels were put for their convenience. Again during the last week of March, 1926, a visit to the locality found the birds abundant, and visiting the food box. At this time the mill employees informed the writer that the Juncos were not so plentiful in the summer of 1925 as in the preceding summer.

Mr. F. A. Patton reported this species as common at the State Game Lodge during the first ten days of March, but found no nests.

These facts gave evidence that the White-winged Junco was a breeding resident of the Black Hills. Consequently about May 25, 1926, Mr. George M. Clement, later a student at the University of South Dakota, made a trip to the Black Hills under the direction of Mr. Over for the purpose of collecting.

On June 3 he found the first nest in an old gallon syrup can in a thicket of small pine trees. The location was near an old road camp and only a short distance from the highway. The discovery was made by first observing the male approach the can with a worm. The nest contained four eggs well advanced in incubation. Both birds were taken in order to determine the species.

On June 5 the second nest was found on the ground under a board in a pine thicket near the sawmill. It contained four eggs, too far advanced to save. On the same day another nest was found under the end of an old log, and contained four young which "distinctly showed the white wing bars".

On June 6 a nest was found on a roof plate in the blacksmith shop, about nine feet from the ground. The bird had approached the nest from under the eaves. The nest contained four young birds a few days old, in whose plumage the white wing bars were apparent. This was almost the exact location of the old nest taken by Mr. Over in 1924.

On June 7 another nest was discovered under the root of a tree near the highway. The four eggs were well advanced. On the same date still another nest with four young birds was found in a very similar location and close by.

The season of 1927 was backward, due to late snows in the Black Hills. The first nest found this year by Mr. Clement was on June 13, and in the exact place in the blacksmith shop where one had been found in two preceding seasons. Whether the same female built here during four consecutive seasons we do not know, but Mr. Clement records the fact that the female in 1927 did not flush from the nest until touched by the hand, which may be taken as evidence that she

had become accustomed to human associations. This nest contained three fresh eggs.

On June 11 two nests had been reported to the writers; one under a log with four eggs was destroyed when the log was moved, while another contained eggs well advanced.

On the 14th a nest was located in a tomato can within ten feet of the syrup can nest of 1926. It contained only two eggs, and although the nest was visited daily until the 17th no more were laid. The two, therefore, constituted a full set. About twelve feet distant an old nest was found in another tomato can, which led us wonder if this was a territory claimed annually by the same pair of birds. On the 15th another nest was found under the exposed root of a tree near the roadside. The female was flushed by striking the tree with a stick and joined her mate in a tree a few yards from the nest. The four eggs were too far along to save. It should be stated that Mr. Clement carried a drill, and tested one egg before taking a set. During the last season of work he was able to detect the condition in some cases without the loss of a single egg.

On June 26 another nest was reported by sawmill employees but was destroyed in moving the log. As late as June 29 a nest was found containing one egg, and was visited daily until a set of five was taken.

In 1928 Mr. Clement made a third trip to the Black Hills with the following results: The first nests were found on May 27 under old logs on a hillside; two nests contained four eggs each, but only one set was saved. On the 28th a nest under exposed roots contained four eggs far advanced; here Mr. Clement watched three young birds reared until they left the nest. On the 28th he found another nest with four fresh eggs, which were taken. On the 30th five nests were found, as follows: nest under a log with four incubated eggs; nest on the side of a steep canyon with four eggs far advanced; another nest in same locality with three fresh eggs; another nest with young which left on June 5; the last nest with eggs far advanced.

On May 31 a nest was found with three young birds just leaving the shells, while the fourth hatched on the following day. These birds were under observation until they were able to leave the nest, on June 10. On the same day another nest was found in an open field under a clump of dead grass; it contained four young. Three nests were found on June 1, one under a rock ledge with four advanced eggs, one with four fresh eggs, and one with four eggs ready to hatch. On the 2nd another nest under a rock ledge with young birds, on the 3rd a nest under exposed roots with four young, and on the 6th

a nest with four fresh eggs under a rock ledge, were added to the list.

Mr. W. D. Sharwood, a resident of the Black Hills, has sent me the following notes of the White-winged Junco observed in his vicinity: Parents feeding young on June 12, 1919. Adults apparently nesting on May 8, 1924. Building nest in rear wall of an outhouse on April 13, 1925. Female incubating on May 31, 1925. Young being fed by parents on September 5, 1925.

By way of summary it may be noted that the White-winged Junco is a more or less abundant resident species in local areas of the Black Hills, especially at an elevation of about 5300 feet. From the experience of Mr. Clement it would seem that the species was more abundant in 1928 than in the other periods studied, or that Mr. Clement became more skilled in finding the nests; perhaps both factors played a part.

It is also evident that their nesting season extends over a rather long period, varying according to climatic conditions. As to the nest sites Mr. Clement's notes of 1928 state that this junco prefers "a sloping, mossy hillside, extending up from a creek of running water. The nests are on the ground, under a rock ledge, exposed root, or log." Mr. H. E. Lee reports a nest of this species which was located six inches above the ground in a low shrub with thick foliage. With the nests found in the blacksmith shop nine feet from the ground, as well as others in the sawmill, and including the old fruit cans, it is quite evident that these juncos can adjust themselves to a variety of locations. After all, their nesting habits do not cary far from those of the genus, but are in close resemblance to those of the Oregon Junco.

While four eggs is the usual clutch, it varies from two to five, the small number probably being that of very young or very old females.

We have reports of the nesting of the Slate-colored Junco in the Black Hills, but as yet no authentic records are at hand.

University Museum, University of South Dakota,
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HABITS OF THE FLORIDA RED-SHOULDERED HAWK

BY DONALD J. NICHOLSON

The Florida Red-shouldered Hawk is found throughout the entire State, and is a common bird. No other hawk approaches it in numbers, and in certain districts it is exceedingly abundant. It frequents pine forests, prairies, marshes, river-beds, swamps surrounding lakes, extensive cypress swamps, and in fact most any place inland, but I have never seen it on or very near the sea-coast.

I have seen this bird as far south as Cape Sable, and found it nesting on March 6, 1927, about ten miles southwest of Royal Palm Park, Munroe County. The nest was in a small cypress and held two young about two weeks old. The parent was, or seemed to be, a much lighter or paler bird than those found in other parts of Florida, except on Key Largo, where I saw three birds the early part of April, 1927. The Red-shouldered Hawk of this key is now separated, and is said to be a smaller and paler bird than that of the mainland. The birds in Dade and Munroe Counties, however, appeared to me much paler than those found in other parts of Florida. This difference was so pronounced that I noticed it in the field, without the aid of specimens.

Early in December the birds begin their wild courtship "songs", which consists of loud, piercing, shrill calls, or screams, given while circling in the air. With loud cries they either soar or flap their wings rapidly, going in a circle higher and higher. From one to four individuals may be seen in the air at a time over the chosen nesting site. Spirited swoops and long dives through the air are often seen, they calling sharply the while. These cries are given also flying from one place to another. They are most noisy at this period, and keep it up throughout the entire day at intervals.

Early pairs begin building their nests in December, and by January 19 have deposited the complete set of two or three eggs. I have found a single fresh egg as early as January 18, 1927, and have found half a dozen full sets by January 20. It seems that these are laid by very old birds, as each year these same locations have early sets, regardless of cold or mild winters and wet or dry seasons. By February 15, the birds are well under way, but many deposit their eggs in early March, and a few belated nesters wait until April. These, possibly, are young birds of the year before.

More open spots in cypress swamps are chosen for nesting, and if in pine and cypress country a pine close beside the swamp is selected. They do not nest very far from water, and invariably quite

close to the cypress strands. The birds are very numerous on the Kissimmee Prairie, and in fact on most any prairie, nesting in the mixed clumps of palms, oaks and gum trees, which are called "hammocks". Their nests are usually about twenty-five to thirty feet above the ground, but few are placed eighteen or twenty feet, and some fifty to sixty-five feet above the ground. Their favorite nesting tree is the live oak draped heavily with Spanish moss: next is the pine, and third choice is "cabbage" palms; but gums and cypress trees are frequently used. Some of the nests are most artfully hidden among the heavily moss-festooned oaks, and it takes a keen eye to detect them. However, more often they are in plain sight, in the crotch, or out on some horizontal branch. There seems to be no preference.

I do not remember one instance where Spanish moss was not in use, and it comprises in many cases the bulk of the nest. Dead sticks, air-plant leaves, clumps of grass roots, and Spanish moss compose the body of the nest, and it is lined with Spanish moss, a few read air-plant leaves and stems, bark, green or dead leaves, and down from the parent. Some nests are quite heavily sprinkled with this white down, and a sure sign of occupancy is the tell-tale down clinging to twigs surrounding the nest. The nest cavity is rarely deeply cupped, more often a gradual depression. Some are quite large structures, while others are quite small. In many nests green leaves are used, causing the eggs to become badly stained.

In many cases the nests are constructed long before the eggs are deposited, and I have waited a month after the nest was ready before the bird laid. On the Kissimmee Prairie, where tree cavities are scarce, this hawk often has her new nest stolen by a pair of Florida Barred Owls, and is compelled to build another. I have noted this on four or five occasions. Seldom will this hawk use the nest of the year before, but prefers to re-build each season; however, it does sometimes use the old nest, by merely adding some fresh material, mainly live Spanish moss, air-plant leaves, green leaves, etc. If a set is collected the bird rarely deposits a second set in the same nest, but resorts to another tree in the same clump, or near the original site. They cling tenaciously to the same place each year, no matter how often they may be disturbed. Second sets are deposited within three weeks to four weeks after the first have been destroyed.

The Florida Red-shouldered Hawk lays from one to three, very rarely four, eggs. I have seen possibly close to 150 nests, and two eggs or young is the rule, but three are laid quite often. I should say the ratio is five to one in favor of the smaller number. Quite

often only one egg is laid. William Leon Dawson found the first set of four eggs I ever saw in March, 1928, while with me. In 1929, Messrs. J. C. Howell and Wray H. Nicholson took a set of four eggs. Both sets were found on the Kissimmee Prairie and the only large sets known to me. Some years they seem to run heavily to sets of three eggs, but one year (1910) I took seventeen sets, of which two were single eggs, and one set was of three eggs.

As nearly as I can ascertain, it takes a little over four weeks for the eggs to hatch, judging from a set I took three weeks after finding a single fresh egg. It appeared from the stage of incubation that these eggs would have taken eight or ten days more to fully develop. The young are alert little fellows, clothed in snowy white down, with blue-black bills, and give weak imitations of the adult calls at quite an early age.

After the bird has deposited her full set she is always found on the nest, and rarely slips off until the tree is smartly rapped, or loud shouts are given, or sticks thrown up at the nest. She is often a close sitter and even this does not seem to bother her. I have thrown sticks and had them strike the nest only to have her flit up, and again settle upon the eggs. Often after rapping you are forced to ascend, and then sometimes she leaves the nest softly as an owl, but more often emits wild piercing screams. I once went up to a nest on a windy day and touched the bird's tail once and still she remained. The second time she dashed off like a bullet.

The birds are very bold and fearless in the defense of their nests, either while the eggs are fresh, or with young. One day I visited five nests, and the first bird carried away my cap in her talons and struck me such a severe blow that it gave me a bad headache, and left a scratch on my forehead. At two more nests I was attacked and struck upon the head. Many other times this has happened. This bird coming swiftly as an arrow directly for your head, screaming wildly, gives a timid soul the shivers, and unless you wildly wave your arms and shout, most likely she will give you a stiff blow that will put fear into you, and respect for their bravery. Actions of different birds vary when flushed from a nest; some will slip off quietly and not make any outcry, but the common practice is to begin calling and circling above, making dashes at the collector. Generally the male joins in. Others are content to alight in a tree within a few yards and try to frighten you with their shrill cries.

Two pairs rarely use the same hammock on the prairies, but I have found on one or two occasions two nests within few hundred

yards, where clumps were scarce. Nesting places are scarce on the prairies, and Florida Barred Owls, Florida Crows, and Audubon's Caracaras are often found nesting together in hammocks of an acre in area. Sometimes a Florida Red-tailed Hawk will nest near a Red-shoulder.

While in Collier County, May 1 to 5, 1928, I found several nests upon that late date with small young. The eggs of this hawk are quite handsome, but many are very plainly colored, with brown markings (sparse) on a ground of white. Frequently immaculate eggs are seen. Many have only a few minute dots. Generally, the marking is bold, with spots and splashes of reddish, brown, blackish, chestnut and lavender. Some are almost entirely marked faintly with lilac or lavender, and no other colors. Eggs of a set most usually match in size, but in a series the size of the eggs varies considerably. Some eggs are equal ended, ovate. Most eggs are blunt-pointed, while others are almost round. The patterns of marking are quite varied; some are heavily marked at the large end with other markings scattered over the entire egg. Others are equally marked all over, while still others are heavily marked at the center, more so than at the large end.

I have never seen these hawks chasing birds, and they make no attempt to catch small birds, which often annoy them in flight, but dodge and try to avoid them. Their food consists mainly of frogs and mammals; also many snakes are caught, and occasionally a bird. I have rarely observed feathers of birds in their nests. It can be safely classed as a beneficial bird. However, farmers in certain sections have suffered the loss of many small "biddies", and these hawks are killed whenever an opportunity is offered.

The method of hunting food by this hawk is perching alertly on posts, dead trees, or stubs, out in the open, watching patiently by the hour for its prey, be it some luckless mouse, snake, or frog. It is more frequently seen along the banks of streams, ditches, marshes, lakes, etc., watching for frogs, which is a favorite food. Crickets and grasshoppers are also eaten.

I counted ten of these birds within a few miles, posted on the top of telephone poles along the ditch, as I passed in my automobile, near Everglade, Florida, in April, 1928. Many did not offer to fly as I passed within twenty feet of them. However, the birds are as a rule rather shy, and do not permit close approach, except during the nesting season while near a nest.

Orlando, Florida.

WATER BIRDS IN A DRY LAND

BY WALTER E. LEWIS

I am located on the border of the Great American Desert. The bleak and windswept plains stretch westward to the base of the towering Rockies. The casual observer might say, as many have said, "Here there are no birds". At any rate, one might expect to find only the hardier birds, such as the native sparrows and the meadow lark, or the soaring eagle. Truly, these are all here, but the surprising discovery that the investigator makes is the relative abundance of water birds in this generally arid and treeless country. The explanation is, that while ours is a dry country, it is wet in spots.

My location is in northwestern Oklahoma, a little south of the Kansas boundary and on the line where the Panhandle is joined to the main part of the state. The Cimarron River, noted for its quicksands and its shifting channels, flows in an easterly direction a few miles to the north of me, while Beaver Creek, a main tributary of the North Canadian, comes down from the distant mountains of New Mexico a few miles to the south. Between these two streams is a flat, some dozen miles across that has no drainage outlet to either stream. The water from heavy rains falling on this territory collects in shallow fresh water ponds.

These ponds vary in size from a few acres to several hundred acres. Between heavy rains they may go dry, but the largest one, located about two and one-half miles northeast of the village of Gate, has contained water for more than five years at a time. During such a period it becomes stocked with fish, while snails, toads, and numerous forms of aquatic insects and plants are abundant. Thus it is that conditions are often favorable for the presence of large numbers and varieties of water birds.

My list of identifications numbers some fifty species of shore and water birds. I do not claim to include all the forms that visit this locality, as my bird study is carried on simply for the fun of it and as a minor accompaniment to my business of farming. Then, too, I do not collect. Living beauty interests me more than a specimen with a catalogue number. I would rather be baffled by a living mystery than to have a dead certainty lying on its back with its feet in the air. Of course this is utterly unscientific, but then I do not claim to be a scientist, merely a lover of birds. My list is, therefore, smaller because I have included only those birds whose identification has been positive and unquestionable, and have excluded a number of probabilities.

List

Eared Grebe. *Colymbus nigricollis californicus.* This form has been seen only once. On May 7, 1924, five individuals were seen on the largest lake.

Pied-billed Grebe. *Podilymbus podiceps.* The only record of this interesting diver is one seen May 15, 1927.

Herring Gull. *Larus argentatus.* In December, 1921, six of these gulls appeared on the big lake, which was swarming with little fish, and stayed all through the winter. At least two of them were shot by hunters. I have seen none since.

Ring-billed Gull. *Larus delawarensis.* There are two records of this, once on May 20, 1921, near the big lake, and again March 24, 1924. This was a very windy day and the gull was flying about in the fields apparently in some difficulty because of the high wind.

Franklin's Gull. *Larus franklini.* This splendid friend of the farmer is a regular visitor here. In the spring time it fearlessly follows the farmer as he works the ground. Very few insects thus exposed escape. When there is water in the lake the gulls gather in the autumn in great numbers, appearing in September or October. They spend their nights on the lake, streaming off in the morning to search for grasshoppers in the wheat fields. During their stay here they visit in turn all the fields within twenty-five or thirty miles. They are very thorough in their work and, as the flock sometimes numbers 20,000 individuals, they can do a vast amount of good in destroying insect pests.

Forster's Tern. *Sterna forsteri.* These graceful birds are occasional visitors and may be seen skimming over lake or river.

Least Tern. *Sterna antillarum.* This is a summer resident and may generally be seen near the old swimming hole on Horse Creek, a small tributary of the Cimarron.

Black Tern. *Chlidonias nigra surinamensis.* These useful birds are regular migrants and summer visitors with us. They are faithful in scanning the freshly turned earth in the fields in search of insects. About the middle of May, 1912, an unusually large number passed in migration. It was toward the middle of the day when my attention was accidentally directed upward and I discovered a remarkable flight. At a height of about one thousand feet a stream of Black Terns about one-quarter of a mile wide was rapidly flying northward. I could distinguish their calls like the faint barking of prairie dogs. The flight continued for more than half an hour during which time count-

less thousands of individuals passed on their way to their northern breeding grounds.

WHITE PELICAN. *Pelecanus erythrorhynchos.* This imposing-looking bird is a regular migrant here, generally in small numbers but occasionally in large flocks. In the spring of 1923 a flock of 250 or more rested over night on the big lake. It was a magnificent, never-to-be-forgotten spectacle. About nine o'clock the next morning the great birds resumed their northern flight. Ten years ago a hunter from the neighboring village crippled a pelican in one wing and captured it. He took it home and cared for it. It readily became domesticated and made itself entirely at home. The village dogs, seeing this great strange bird walking about, thought to attack it, but a few blows from its great beak soon convinced them that they had no business with it. It would eat quite a variety of food, but only when there were bones in it. One day it went visiting to a neighbor's house and the lady of the house set out a pan of gravy for it to eat. It scooped up the panful into its capacious pouch then, finding there was no bone in it, stepped deliberately over to a tub of rain water that the lady had caught for washing her hair. It plunged its beak into the water and thoroughly washed out the offending gravy. The pelican was kept domesticated for eight months when, unhappily, it ate some poisoned meat intended for dogs, and died.

AMERICAN MERGANSER. *Mergus americanus.* Thi fish duck is a common migrant here. I have seen it especially in the spring-fed bayous along the Cimarron where fish are always abundant.

RED-BREASTED MERGANSER. *Mergus serrator.* This is a rare migrant, as I have seen only one here.

MALLARD. *Anas platyrhynchos.* This fine duck is a common migrant in large numbers. It furnishes a large percentage of the great flocks of ducks that we often have here when the lakes are full. While very often they are present in immense numbers, I believe that the latter part of February, 1921, showed the greatest flocks in my observation. They rested in the day time, as is their custom, in a fairly compact mass toward the middle of the lake, covering probably twenty-five or thirty acres, with at least a thousand birds to the acre, and flew out to their feeding grounds in the fields just as dusk came on. The ducks here like to feed on the grain fields of milo and kafir, and in the autumn often do great damage to fields where the stalks have broken over or been blown down, so that the head of grain is on the ground. A flock of five or ten thousand hungry ducks can well-nigh destroy a field of grain in a few nights. Not only do they eat the

grain but they pull the head to pieces and scatter it about so that it is wasted. When the ducks once start in on a field it is almost impossible to keep them out until it is destroyed. Of course the Mallard is not to blame for all this damage but as it makes up a large part of the duck population it will have to take its share of blame. Sometimes Mallards have been known to nest here.

BALDPATE. *Mareca americana.* This is not a common duck but it has been seen several times.

GREEN-WINGED TEAL. *Nettion carolinense.* These little fellows are very common here. They bunch up so on the water that they are an easy mark for the hunter. I once saw fifty-five birds that were taken with five shots of a pump gun, while another hunter secured twenty-three with one shot.

BLUE-WINGED TEAL. *Querquedula discors.* These are the most commonly seen of all ducks as they are here a large proportion of the time and are much less shy than some of the others. Quite a number stay around until the first of June and some regularly nest here. By August numbers of them are back from the north. They are the last to leave and the first to return, but do not stay during the colder part of the winter.

CINNAMON TEAL. *Querquedula cyanoptera.* This duck has apparently not been observed elsewhere in Oklahoma, but I have seen two specimens obtained by hunters, one in November, 1920, the other the following year.

SHOVELLER. *Spatula clypeata.* The black head, white chest, and chestnut sides of these handsome ducks are familiar sights to the hunters in this section. While these birds are generally seen in pairs they often congregate in flocks, and form a goodly proportion of the duck population here.

PINTAIL. *Dafila acuta tzitzihoa.* These large ducks are very common in the fall, winter, and spring, and more than one season have nested near a quiet pool on Horse Creek.

REDHEAD. *Marila americana.* Large numbers of these choice ducks annually visit here.

CANVAS-BACK. *Marila valisineria.* These are much less common than the Redhead, and most of what hunters call Canvas-backs prove on investigation to be Redheads.

LESSER SCAUP DUCK. *Marila affinis.* These are not ordinarily very numerous, but October 28, 1925, a flock of probably two thousand of them was observed.

AMERICAN GOLDEN EYE. *Glaucionetta clangula americana.* Only

once have I seen this rare duck. On November 20, 1920, I saw one on a small pond in the pasture near my home. It was in company with several scaup ducks. Its diving habits were plainly noticeable.

BUFFLE-HEAD. *Charitonetta albeola.* This duck, too, I have seen but once. On April 10, 1924, a youngster, disregarding the mandate of Uncle Sam, shot and brought in a specimen of this duck.

LESSER SNOW GOOSE. *Chen hyperboreus hyperboreus.* While not so common as they were fifteen years ago, these beautiful white geese with black-tipped wings are fairly regular in migration. They are less wary than the Canada Geese and suffer more from hunters, both on that account and because they are so conspicuous. They like to feed on green wheat, and a flock of them in a green field make a striking and beautiful sight, like a drift of snow on a green background.

WHITE-FRONTED GOOSE. *Anser albifrons gambeli.* This rather uncommon goose I have observed three different years. They have been solitary individuals except in the fall of 1920 when a flock of about twenty was seen. Early in October, 1924, a lone goose was seen in my wheat field. There was considerable volunteer wheat growing on the ground, that attracted the goose when I discovered it. In the same field I was drilling wheat around a "land", and whenever the drill passed the place where the feeding was the best the goose would fly away to another part of the field. As soon as I was gone it would come back, and repeat the performance with each round. As I worked in that field for two or three days it became noticeably tamer, showing less and less alarm, until it would fly only a few rods to get out of the way of the team. It stayed around for about three weeks, grazing on the wheat in the day time and spending the night on a small pond in the adjacent pasture. All this time it was within plain sight of the house and close to where we were working and choring. It finally became so tame that several times I walked past it within a distance of two rods without alarming it. It would raise its head and look at me, but as I passed on it would quietly resume its feeding. At last one night we heard it give its farewell squawk, bidding us adieu as it resumed its wandering; sure enough, in the morning the pond was vacant and we saw the bird no more.

CANADA GOOSE. *Branta canadensis canadensis.* When we hear the honk of the Canada Goose in the late fall we know that the time has come to make everything snug and secure, for it is the forerunner of an approaching norther. Except in the most severe weather, it stays here throughout the winter. These geese are wary and suspicious and not easily shot by hunters. The usual method of hunting them here

is to locate them in the middle of a level wheat field, dash upon them with a speedy motor car and shoot them before they can get under way and out of gunshot. Ordinarily a flock will consist of twenty or thirty birds, but I have seen as many as two hundred in a flock.

Black Brant. *Branta nigricans.* On April 2, 1922, I saw a Black Brant in a flock of fifty Canada Geese feeding on the wheat in my field. This is my only record of this form, and as far as I know the only one reported from Oklahoma.

American Bittern. *Botaurus lentiginosus.* This ungainly bird with its weird call is a common summer resident here. It breeds regularly in the bog along the Cimarron where cat-tails, canebrake, and tall three-cornered grass furnish ample cover and protection. In wet seasons it also nests around the ponds on the uplands.

Great Blue Heron. *Ardea herodias.* The Great Blue Herons are a familiar sight here throughout the summer. They regularly nest along the Cimarron. With their slow, flapping flight they fly across to the shallow lakes of the upland, where toads and insects are abundant. I have seen as many as nineteen individuals at a time on one pond.

Little Blue Heron. *Florida coerulea.* One individual was seen in late summer in the bog along the Cimarron.

Black-crowned Night Heron. *Nycticorax nycticorax naevius.* A flock of thirteen of these noisy squawkers was seen sitting in the topmost branches of a large cottonwood tree in a grove on Horse Creek. March 17, 1921.

Whooping Crane. *Grus americana.* Fairly large flocks of these beautiful white birds were seen in 1909, 1910, and 1911. In the fall of 1912 a single individual was seen and since that none have been here. Apparently their fatal gift of beauty has doomed them to extermination.

Sandhill Crane. *Grus mexicana.* Some bright, sunshiny day in the first week in October we are sure to hear the rolling bugle call of the Sandhill Cranes. By looking carefully in the direction of the sound we can at last see the glint of the sun's rays on the distant flock. As the birds soar in wide sweeping cricles they are nearly invisible at a distance of two or three miles except when they turn so that the rays of the sun are reflected from their feathers. When first heard they are probably half a mile high and two or three miles away, yet their powerful call comes clear and melodious. When they are close overhead another note can be distinguished, a kind of hissing undertone that in a large flock is almost constant. Cranes are generally seen in flocks of from thirty to sixty, but in the spring of 1923 I saw

a flock of 275 pasturing on my growing wheat; and in early October, 1926, a flock of more than three hundred passed over.

Virginia Rail. *Rallus virginianus.* This shy and elusive bird of the marshes sometimes nests in the bog along the Cimarron, and I have seen the young half-grown birds there.

Black Rail. *Creciscus jamaicensis.* The only individual that I have seen I caught alive in my garden following a heavy rain in the early fall of 1915.

American Coot. *Fulica americana.* Mud hens are very common in fall and spring, and several nest here during the summer. Being undisturbed by hunters, they are quite tame, and show little fear of man. When they do take to the air at last, after much kicking and splashing, they do not ordinarily fly far, but settle down again into the water.

Wilson's Phalarope. *Steganopus tricolor.* This delicately colored and very interesting bird is always present in large numbers in migration. The larger size and brighter coloration of the female is a unique and striking characteristic of these birds. They feed in the shallow margins of the ponds or in roadside ditches and barrow-pits. A peculiar feature of their conduct is their propensity to turn round and round like a whirling dervish, or like a dog chasing its tail. The individuals that I have watched seem to prefer a counter-clockwise direction, though occasionally the movement is in the opposite direction.

Avocet. *Recurvirostra americana.* Few birds are more beautiful than this wading bird with the upcurved bill. The rich cinnamon of its head and chest, and the contrasting black and white of its body, make a picture not soon to be forgotten. Near the first of May, 1925, a flock of about ten appeared in my pasture pond. They were not especially shy, and permitted observers to approach within a few rods to admire their graceful movements and their exquisite coloration. A caller to whom I showed them could scarcely believe that objects of such grace and beauty could be seen here. I had previously seen small flocks on April 24, 1921, and May 20, 1922, and since then, one bird about April 27, 1927, and three August 14.

Wilson's Snipe. *Gallinago delicata.* The "jack" snipe is a regular and fairly common migrant here.

Long-billed Dowitcher. *Limnodromus griseus scolopaceus.* On May 7, 1924, I saw a flock of fifteen of these birds on the margin of the big lake. They were busily engaged feeding on the small insects along the water's edge and paid little attention to me until I was within about twenty feet of them, when they flew away a short distance.

BAIRD'S SANDPIPER. *Pisobia bairdi.* This common and regular migrant is seen in the shallow pond and on the mud flats in company with the Least Sandpiper and the Yellow-legs.

LEAST SANDPIPER. *Pisobia minutilla.* Shore birds in general are shy and retiring but the Least Sandpipers seem to have little fear of man. They are so intent on their business of picking up their dinner that I have often passed within a few feet of them without causing alarm.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus.* I have only one record of this bird. One was found impaled on a barb of a wire fence. June 2, 1922. Apparently this was the work of a shrike.

GREATER YELLOW-LEGS. *Totanus melanoleucus.* When several of these attractive birds alight on a pond and gracefully raise their wings above their heads in the shore-birds' salute, they make a very pretty picture. They are not very common in migration, but nearly every year I see them.

LESSER YELLOW-LEGS. *Totanus flavipes.* This smaller form is rather more numerous in migration than the Greater Yellow-legs.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus.* I have seen this bird only once. September 4, 1921, one individual was discovered on the shallow pond in my pasture. The strongly contrasting white and dark gray plumage, visible when it flies, makes it a striking and noticeable bird. Its loud call is unmistakable.

BARTRAMIAN SANDPIPER. *Bartramia longicauda.* These birds pass in the spring migration, but are not absent long, as they return in July, sometimes by the first of the month. They spend their time in the wheat stubble-fields. They are not timid birds and show little fear of the farmer as he works his wheat ground. Their whistle is a familiar summer bird-note here.

LONG-BILLED CURLEW. *Numenius americanus.* The relatively enormous length of bill of these remarkable birds renders them unmistakable when seen, while the loud cry from which the name is derived cannot be confused with any other sound. They appear here nearly every spring, sometimes singly, but often in larger flocks. In the spring of 1926 I saw a flock of some twenty, picking and probing about on the prairie.

AMERICAN BLACK-BELLIED PLOVER. *Squatarola squatarola cynosurae.* On August 18, 1925, a single individual of this species was observed on my convenient pasture pond. It is a very striking looking bird because of its black under parts. The white at the base of

the tail that distinguishes it in the field from the Golden Plover was plainly visible. As far as I know this is the first record of this bird in Oklahoma. On May 14, 1927, two individuals were seen on the same pond where the first was discovered.

Golden Plover. *Pluvialis dominica dominica.* Since this remarkable voyager goes south by the ocean route, the spring migration is the only opportunity for its observation. I have seen it once, on May 18, 1922, when six individuals were seen on the shore of the big lake.

Killdeer. *Oxyechus vociferus.* The first week in March seldom fails to show the arrival of the first Killdeer. Everyone is familiar with the Killdeer, the most common and the most noisy of the shore birds. The daylight hours are not enough for their never-ending clack; often on moonlight nights they fly about to tell the world of their troubles. Of course at nesting-time they are very solicitous of intruders and feign the most desperate injuries to lead them astray. They are, however, nimble cripples, and can always escape, no matter how hard pressed. I do not wonder that they are proud of their brood, for very attractive are the little fluffy balls that trot around in the mother's wake.

Snowy Plover. *Charadrius nivosus.* I found a parent bird with young running about on the sand flats along the bed of the Cimarron River, July 28, 1922. The young ones were still so small that they were readily caught. The parent seemed much distressed while the little ones were captive and when they were released led them hurriedly away.

As will be noticed from the list more than one-third of the species of water birds are ducks and geese. In numbers of individuals, too, I presume they make up fully as large a proportion. When the lakes are full this is a veritable hunters' paradise and sportsmen come for hundreds of miles to take advantage of it. Probably another third of individuals are gulls and terns, while the remainder is made up of all the other species.

None of the water birds are all the year residents, but there is no time, excepting the most severe winter weather, when some interesting species are not present, adding variety and beauty to the avifauna, and multiplying the pleasure of the lover of birds.

Gate, Okla.

BIRD MIGRATION RECORDS IN NORTHWEST ARKANSAS

BY W. J. BAERG

Several lists of birds of Arkansas and of parts of Arkansas have been published, but so far as I know there are no available records of the dates of the arrival and departure of our migratory birds. Such information seemed essential for a course in Ornithology offered at the University, and for this reason, primarily, an attempt was made to observe the arrival and departure of the migratory birds.

The work was begun in 1924, so that by this time a five-year record* may be presented. The dates given for the arrival of the summer residents, winter residents, and also the transients are, I think, for the most part accurate, or nearly so. The dates of the departure of the winter residents are likewise fairly accurate. However, the departure of the summer residents is not easily ascertained and the dates are, therefore, at best somewhere near the truth.

In a few instances the field trips had to be postponed on account of sickness of the observer, or on account of some other unfavorable circumstance, with the result that exact dates of the arrival of a few species were not secured. These instances, where the observer failed to observe the first arrivals, have been indicated in the table.

The records were obtained on field trips taken during the height of migration (March, April, and May), three or four times a week; during the remainder of the year, about once a week. The route followed was planned so that it includes all the different type localities available in this part of the state. These are: outskirts of the town, hawthorn-smilax thickets, dry oak woods, tall elm and sycamore timber, rivulets and small streams, fields, and meadows. On these trips the distance varied between six and ten miles. The route is changed somewhat in order to have it include one or several favorite haunts of the less common birds at the time of their expected arrival. In addition, special trips are made to localities farther away, in order to widen the range of observation.

The region in which these observations were made is hill country with an altitude of about 1450 feet. There are no large rivers, but a number of small streams that continue to flow even through very dry summers. On the hillsides are numerous springs that attract birds. An abundance of hawthorn, smilax, buckbrush, and wild grape in the extensive woodland areas serves to bring in a large number of winter residents.

*Mr. Frank Smith, student assistant, has made many of the observations recorded in this paper.

Migration Records

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Bittern			March 27	April 5					March 20	April 4
Great blue heron			March 29		April 18			Oct. 28	April 3	Sept. 16
Green heron			April 11	Sept. 3	April 21	Sept. 19	May 8	Sept. 25	May 1	
Woodcock (1)	March 22									
Wilson's snipe (2)	April 4		March 25	April 4	March 28				March 23	
Sharp-shinned hawk					Oct. 9 (1925)	April 10	Nov. 5 (1926)		Oct. 16 (1927)	April 28
Yellow-billed cuckoo	May 18		May 10	Sept. 22	May 1	Sept. 6	May 21	Sept. 25	May 13	Oct. 7
Black-billed cuckoo	May 17		May 17		April 30				May 16	
Yellow-bellied sapsucker			Dec. 7 (1924)	April 1	Dec. 26 (1925)		Nov. 27 (1926)	Feb. 26		Feb. 28
Chuck-will's widow	April 15		April 14	July 28	April 24	July 18	April 16		April 17	July 20
Whip-poor-will			April 14	April 16	April 17					
Nighthawk							May 11	Oct. 2	May 16	Sept. 30
Chimney swift	April 9		April 5	Oct. 1	April 3	Oct. 4	April 2	Oct. 11	April 2	Oct. 17
Ruby-throated hummingbird					May 2		April 17	Oct. 1	April 29	Oct. 6
Crested flycatcher	April 24		April 20		April 23	Sept. 9	April 18	Sept. 9	April 17	Sept. 2
Phoebe (3)	March 28	Oct. 12	March 8	Oct. 18	March 18	Oct. 8	March 6	Oct. 2	March 11	Oct. 14
Wood pewee	April 27		May 3	Aug. 27	April 28	Oct. 3	April 19	Sept. 11	April 30	Sept. 16
Acadian flycatcher	May 16		April 26	July 26	May 2	July 31	May 1	Aug. 11	May 1	Aug. 28
Least flycatcher							May 1	June 26	May 1	May 19
Bobolink			May 11		May 23		May 13	May 18	May 18	
Cowbird (4)			March 22	Sept. 16	March 18		March 19		March 18	Sept. 11
Orchard oriole	April 25		April 23		April 29	Aug. 22	April 21	Aug. 5	April 18	Aug. 27

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Baltimore oriole (4a)	April 25	May 2	April 23	May 11	April 30	May 22	April 24	May 21	April 27	May 13
Rusty blackbird		April 6	Nov. 23 (1924)	March 27	Nov. 8 (1925)	April 3	Oct. 31 (1926)	March 27		April 1
Purple finch	March 22	April 18	Jan. 31	April 13	Nov. 29 (1925)	April 24	Feb. 26	April 3	Oct. 28 (1927)	April 11
Vesper sparrow			March 20	April 10	March 28	April 8	March 15	April 1	March 14	March 23
Lark sparrow (8)	April 20		April 9	July 11	April 17	July 26	April 11	July 20	April 24	July 16
Harris's sparrow		April 4	Nov. 16 (1924)	April 21	Oct. 25 (1925)	May 2	Nov. 5 (1926)	April 30	Oct. 28 (1927)	April 28
White-crowned sparrow		May 2	Oct. 19 (1924)	May 10	Oct. 12 (1925)	May 16	Oct. 8 (1926)	May 11	Oct. 16 (1927)	May 10
White-throated sparrow		May 16	Oct. 26 (1924)	May 10	Oct. 12 (1925)	May 7	Oct. 12 (1926)	May 8	Oct. 16 (1927)	May 13
Tree sparrow			Oct. 19 (1924)	April 3	Oct. 18 (1925)	March 21	Nov. 28 (1926)	March 27	Oct. 30 (1927)	
Chipping sparrow	March 27		March 17	Sept. 13	March 23	Oct. 22	March 17		March 12	Oct. 13
Field sparrow (5)			Feb. 6		Feb. 18		Feb. 26		Feb. 28	
Slate-colored junco		April 6	Oct. 19 (1924)	April 7	Oct. 18 (1925)	April 9	Oct. 22 (1926)		Oct. 16 (1927)	April 11
Song sparrow		March 30	Oct. 19 (1924)	April 5	Oct. 18 (1925)	April 10	Oct. 15 (1926)	April 30	Oct. 19 (1927)	April 28
Lincoln's sparrow (6)			Feb. 25	May 17				May 4	Oct. 16 (1927)	April 28
Fox sparrow		April 5	Nov. 30 (1924)	April 7	Oct. 18 (1925)	April 9	Oct. 31 (1926)	March 13	Oct. 19 (1927)	April 11
Towhee (5)			Feb. 25		Feb. 18		March 6		March 3	
Rose-breasted grosbeak	May 9		May 12		May 2		April 30	May 17	May 2	May 6
Blue grosbeak	May 2		April 26	Aug. 27	April 30	Sept. 12	April 30	Sept. 4	May 6	Sept. 12

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Indigo bunting	May 3		May 2	Sept. 17	April 26	Sept. 19	April 24	Sept. 27	April 28	Sept. 2
Dickcissel	May 3		April 26	Aug. 11	April 30	July 31	April 27	Aug. 11	May 1	Aug. 29
Scarlet tanager (7)	May 2		April 23		April 21		April 26			
Summer tanager	April 27		April 23		April 24	Oct. 12	April 20	Oct. 9	April 21	Oct. 14
Purple martin			March 13		March 22	Aug. 26	March 18		March 19	Aug. 27
Rough-winged swallow			May 6		April 29		April 10		May 1	
Red-eyed vireo	April 25		April 17	Aug. 20	April 18	Aug. 29	April 15	Sept. 11	April 17	Sept. 16
Warbling vireo			April 24	May 20	April 28	May 16	April 23	May 18	April 27	May 15
Yellow-throated vireo			April 7	Sept. 17	April 17	Sept. 19	April 10	Sept. 18	April 7	Sept. 16
White-eyed vireo	April 18		April 12	Sept. 17	April 18	Sept. 19	April 9	Sept. 25	April 8	Sept. 16
Bell's vireo	April 27		April 23	Sept. 3	May 7	Sept. 6	April 29	Sept. 4	May 1	Aug. 7
Black and white warbler	April 6		March 27	Sept. 11	April 2	Aug. 15	April 1		April 1	Sept. 16
Prothonotary warbler (8a)			April 19							
Blue-winged warbler (16)	April 18	June 27	April 14		April 18	June 25	April 10	June 21	April 28	June 30
Nashville warbler			April 23	May 11	April 30	May 14	April 8	May 7	April 25	May 10
Tennesee warbler	April 11		April 4	May 17	April 25	May 16	April 17	May 20	April 3	May 16
Parula warbler			April 1	July 26	April 9	Aug. 29	March 27	Sept. 18	April 1	July 25
Yellow warbler	April 20	June 27	April 17		April 17	July 16	April 15	June 19	Apr. 24(9	Aug. 27
Myrtle warbler (10)		May 2	April 3	April 26	March 18	April 21	March 19	April 30	April 1	May 6
Magnolia warbler			May 7	May 11	May 14		May 8		May 13	
Sycamore warbler			April 5		April 9	July 10	March 27	July 4	March 28	July 14
Prairie warbler			April 5	Sept. 13	April 13		April 11	Sept. 12	Apr. 25(9	Aug. 31
Ovenbird	April 18		April 17	Aug. 27	April 18	July 16	April 19		April 21	June 30
Louisiana water-thrush	March 28		March 27	Oct. 4	March 29	Oct. 3	March 27	Sept. 4	March 18	Sept. 29
Kentucky warbler			April 19	Aug. 20	April 30	Aug. 22	April 15	July 10	Apr. 25(9	July 20
Maryland yellow-throat	April 18		April 12	July 26	April 18	Aug. 7	April 17	Oct. 2	Apr. 25(9	Aug. 26

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Yellow-breasted chat	April 25		April 19	July 26	April 23	Aug. 29	April 16	Aug. 18	April 25	July 23
Redstart	April 25		April 19	Sept. 11	April 18	Sept. 6	April 17		Apr. 24(9)	July 20
Pipit			Feb. 19	April 19	March 2	May 2	March 27	April 28		
Catbird	April 25	Oct. 12	April 20	Sept. 27	April 25	Sept. 30	April 18	Oct. 9	April 24	Oct. 7
Brown thrasher	March 28	Oct. 26	March 8	Sept. 27	March 21	Oct. 15	March 6	Oct. 19	March 13	Oct. 14
House wren (11)	April 18	May 2	April 16	May 17					April 22	April 28
Brown creeper		March 30		April 16	Nov. 26 (1925)	April 2		March 26	Nov. 11 (1927)	March 20
Golden-crowned kinglet (12)			March 12	April 3			March 12		Feb. 28	March 18
Ruby-crowned kinglet (13)	March 30		March 22	April 23	March 21	April 25	March 13	April 24	March 23	May 1
Blue-gray gnatcatcher	April 5		April 4		April 2	Sept. 9	March 27	Aug. 28	April 1	Sept. 2
Wood thrush			April 19	Aug. 20	April 26	Aug. 15	April 14	Aug. 28	April 21	Aug. 23
Gray-cheeked thrush (14)	May 2		May 1	May 6	May 7	May 14	April 30	May 22	May 1	May 6
Olive-backed thrush			April 21	May 26	April 30	May 21	April 22	May 27	April 22	May 12
Hermit thrush	April 6	April 11	March 25	April 12			April 3		March 18	
Robin (15)			Feb. 1		Jan. 30		Feb. 3		Feb. 5	

(1) Seen on fall migration, November 11 and December 3, 1927, also on November 11, 1928.
(2) Seen on fall migration, November 28, 1924; November 8, 1925.
(3) Seen also on February 6, 1925.
(4) One lonesome male was seen on October 31, 1928.
(4a) Observed on fall migration, September 27, 1925.
(5) Resident species.
(6) Records are probably of fall and spring migration, not winter residence.
(7) The scarlet tanager nests in small numbers on some of the Ozark hills, but not in the neighborhood of Fayetteville.
(8) Heard singing in Inola, Okla., August 6, 1928.
(8a) Nests commonly in various parts of Arkansas, but not in the neighborhood of Fayetteville.
(9) Arrived probably earlier.
(10) Seen in fall migration, October 19 to November 16, 1924; October 18 to November 1, 1925, etc.
(11) Seen in fall migration, September 27, 1925.
(12) Observed in fall migration, October 26 to November 23, 1924; and on October 15, 1926.
(13) Observed on fall migration, October 12 to November 16, 1924.
(14) Seen once on December 29, 1927.
(15) Resident species.
(16) Only one pair of these warblers was under observation. The dates under "last seen or heard" are really for the end of the song period. On June 30, 1928, one was observed with a large caterpillar in its bill. In a general way all this applies also to other warblers, such as the ovenbird, Maryland yellowthroat, Sycamore warbler, yellow-breasted chat, and redstart. They are not often seen after their song period is over.

It requires but little experience to learn to recognize a new arrival. Some of these are so much in evidence, for instance the White-eyed Vireo and the Blue-gray Gnatcatcher, that they are not easily overlooked. Some of the birds are, however, decidedly shy on their first appearance, for instance the Louisiana Water-thrush, Wood Thrush, Indigo Bunting, and some others. These require careful watching of the most favored haunts. Often the "distress call" will serve to bring forth one of these new arrivals that is too shy to make itself heard.

Some of the migratory birds, such as the Blue Jay, Towhee, Bluebird, Robin, Mockingbird, and Field Sparrow, are resident species and are common here both during summer and winter. If one may judge by the noise, the Blue Jay is more common here in winter than in summer. The dates of migration of these species can be no more than generally indicated.

Mourning Doves are commonly seen in flocks of ten or more, during the winter. Goldfinches occur here in flocks of a score or two in the winter, while Bronzed Grackles, as well as Red-winged Blackbirds, are commonly seen in flocks of a hundred or more. For these birds, dates of migration cannot be given with any degree of accuracy.

The Purple Finch occurs here during the winter. In some years it appears to be fairly common, in others it seems exceedingly scarce or totally absent. The dates of its observed arrival are, therefore irregular. The dates when the Purple Finches appear in considerable numbers and are much in evidence on account of their song are likewise irregular, varying from February 1 to March 28.

The Phoebe is rare here during the winter; hence, the dates of its arrival may be considered as fairly accurate.

Great Blue Herons and Egrets nest here, but are far from common. The observations on Egrets are omitted here; those of the Great Blue Herons are incomplete.

Some of the sparrows, such as the Swamp Sparrow and the Grasshopper Sparrow, were seen on various occasions in fall and early spring, but the records are not included. The Savannah Sparrow nests in this region, but no observations regarding its migration have been made.

The arrangement in the tables, under calendar years, is not suited to the winter birds. Since a separate table seems undesirable, I have placed the dates of their arrival under the year when the major portion of the residence time comes.

University of Arkansas, Fayetteville, Arkansas.

THE WILSON BULLETIN

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The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

The subscription price in the United States is $1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is $2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Dr. Jesse M. Shaver, Peabody College, Nashville, Tennessee, U. S. A.

EDITORIAL

We Bring to the attention of our readers the following requests for co-operation. There has been an aberrant movement during recent months of the Canada Jay. Readers who have made any observations may assist in the preparation of the report by writing of the details to Dr. Harrison F. Lewis, National Parks of Canada, Ottawa, Canada. Mr. A. L. Pickens (Zoology Building, University of California, Berkeley, Calif.) desires correspondence with all who may furnish observations on the kinds and colors of flowers visited by birds—especially hummingbirds. If the observer is not certain of the correct name of the flower a pressed specimen will be appreciated by Mr. Pickens.

The Notable "Bird Contest" conducted by *Successful Farming* closed on January 1, although the awards may not be made known for several months. This magazine has a circulation of 1,150,000, and about 25,000 answers were received in this bird contest. The goal of the contest was to correctly identify eighty species of birds from their portraits which had been printed in color in the magazine.

The contest was primarily an educational project, at least as nearly as one could conceive in a commercial organization. Prizes were offered, of course; but even in the university, grades are offered as a stimulus to effort. The profit which the magazine receives in increased circulation seems negligible; the good will created by keeping the readers interested and engaged in wholesome and profitable activities seems to be the end sought.

The more people become acquainted with and interested in birds, flowers, trees, and animal life, the greater will be the general satisfaction in rural life, and the greater will be the willingness to "remain on the farm". Appreciation of nature will be one of the greatest factors in making rural life attractive. We applaud *Successful Farming*'s bird contest because it advertises and popularizes the study of birds, which is our own chief interest and hobby; but we see in it much wider implications of a social and economic nature, which are likely to bring results in future generations.

The Des Moines Meeting was successful beyond our expectations. Every thing ran along with precision and co-ordination. The program was one of the biggest, in number of titles, we have ever had. The attendance was by far the largest we have ever had, exceeding by nearly a hundred our 1926 meeting at Chicago. The program occupied every available minute of time, giving less opportunity for visiting than we would have preferred; nevertheless, the hotels, the banquet, and the reception made up this deficit to a great extent.

A great deal of the success of the meeting must be attributed to the enthusiasm and efficiency of the Des Moines people. There is always some danger in mentioning names, lest the stranger may make some mistake of omission; yet we think the work of Mrs. J. E. Stewart and Mr. A. J. Palas deserves public citation. Perhaps our high record of attendance is due to the ladies who gave up the program to remain at the registration desk. The hospitality of Mr. and Mrs. Henry Frankel was much appreciated by the guests.

It may be of interest to many of our members to examine the following tabulated figures concerning our recent meetings:

	Kansas City 1925	Chicago 1926	Nashville 1927	Ann Arbor 1928	D Moines 1929
Local Attendance	12	37	32	31	106
Out-of-Town Attendance	49	75	43	75	96
Total Attendance	61	112	75	106	202
Banquet Attendance	37	61	46	50	77
Titles on Program	21	23	34	24	36
Honorary Members	4	4	4	4	9
Sustaining Members	....	73	68	64	66
Active Members	....	216	244	248	245
Associate Members	....	327	347	383	397
Total Membership	....	620	663	702	717
Total Receipts	$1771	$1753	$1638	$1981	$2167

These figures are taken from the files of the Bulletin, and show a healthy increase in nearly every particular.

Looking, now, into the future, we find that the next three meetings of the American Association for the Advancement of Science are to be held in the middlewest, as follows:

1930. Cleveland, Ohio, Monday, December 29 to Saturday, January 3.
1931. New Orleans, La., Monday, December 28 to Saturday, January 2.
1932. Chicago, Monday, December 26 to Saturday, December 31.*

Meetings beyond these dates, so far as they have been determined, are to be in the east. It may probably be assumed that the W. O. C. will hold its next three meetings according to the same schedule given above. It seems to be our experience in these meetings that the first of the week is the proper time for the W. O. C. meeting. By the end of the week people are tired and go home. Our dinner should be placed on Monday night to avoid conflict with the Zoologists' Dinner, which is usually placed on Tuesday night.

*There has since been some discussion of the proposal to hold this Chicago meeting of the American Association during the summer of 1933, in connection with the World's Fair.

SCIENCE for February 14, 1930, contains a communication from Philip Hadley, of the University of Michigan, claiming that wild Passenger Pigeons have been seen in Michigan during 1929, and also in Indiana, by three persons. None of the observers professes to be a student of birds, but all claim to be acquainted with the Passenger Pigeon. Doubtless, *Science* does not intend, by publication, to lend its support to belief in this report. The chances of mistaking a Mourning Dove for the Passenger Pigeon are so great, that such will be the verdict of most readers of this article.

FR. HAVERSCHMIDT, 50 Kromme Niewe Gracht, Utrecht, Holland, offers a clean copy of Bent's "Petrels and Pelicans and their Allies" (U. S. Nat. Mus. Bull. 121) for $8 postpaid.

TEACHERS who are contemplating the taking of a class of students by automobile into the Yellowstone National Park should be warned that the Government in 1929 added an extra fee of one dollar for each car of such a party. If we understand it correctly this extra tax was added in order to protect the Yellow Bus business. The extra dollar is not charged to family cars, but only to educational parties, such as Dr. Jones has been taking through the west for many years. Without warning Dr. Jones was confronted at the Park Entrance with this novel business scheme. The amount of money involved was trifling, but the principle was exasperating.

Much is being said in these days about the educational aims and purposes of the National Parks. Yet here we find an ugly discrimination against a purely educational enterprise, and for the protection of a commercial one. Even if the reason here assumed for the levying of the extra fee is incorrect, the fact still remains that the fee was charged; and it is difficult to harmonize this with the avowed educational objectives of the Yellowstone Park. There may be a considerable doubt whether the addition of a dollar to the fee will keep out the imposters, anyway. It is to be hoped that this unjust and discriminating regulation will be removed before another season comes.

WITH THIS ISSUE we wish to introduce one new officer. While Professor Stack was promoted from the treasurership to the presidency, he is well known to the membership by reason of his three terms of office. The vacancy in the treasurer's office was filled by the election of Walter M. Rosene, of Ogden, Iowa. Mr. Rosene is the president of the City State Bank of Ogden, and is accustomed to the handling of money and accounts. He is, besides, an ardent student of birds, and a bird photographer of no mean skill. While he is enthusiastic and untiring in his pursuit of bird lore, he is also as conservative in naming a strange bird as he is in distributing silver dollars.

GENERAL NOTES

Conducted by M. H. Swenk

Summer Occurrences of the Harris's Sparrow in South Dakota.—On June 23, 1929, I saw a Harris's Sparrow (*Zonotrichia querula*). My wife had heard and seen it on the preceding day. Other dates that I saw it were June 25, July 4, July 5, and a couple of times during August. I found only one, though on two different occasions I looked searchingly for a possible mate. He appeared normal, and would whistle on every occasion that I saw him.—ADRIAN LARSON, *Arlington, S. D.*

Four Eggs in the Nest of a Mourning Dove.—While many accounts of sets of three and four eggs of the Mourning Dove (*Zenaidura macroura carolinensis*) have appeared, it is thought that additional records are desirable.

On April 5, 1928, Mr. Leo A. Luttringer, Jr. found a Mourning Dove nest which held one egg. On the following morning he flushed the parent from this egg. On April 18 we visited the nest and were amazed to find the slight structure filled to capacity with four eggs. Inquiry into the situation has pretty well established the fact that but one pair of Mourning Doves is nesting in this particular woodland; furthermore the shape and size of the eggs seem to indicate that all have been laid by the same bird.

It may be that exposure of two of the eggs during chilly weather induced the female to lay an additional two. All the eggs were fairly fresh, judging from their translucency; but the anxiety of the parent bird indicated that she had been incubating for some time. I incline, at present, to the belief that the eggs laid about April 5 were infertile, or that the small embryos were killed by exposure, and that two additional eggs were subsequently deposited.—GEORGE MIKSCH SUTTON, *Bethany, W. Va.*

The Northern Pileated Woodpecker in Westmore'and County, Pennsylvania.—On the evening of June 22, 1929, Oscar C. Reiter and the writer heard, in fairly thin chestnut woods above McGinnis Run in Westmoreland County, Pennsylvania, a hammering that indicated the Northern Pileated Woodpecker (*Phloeotomus pileatus abieticola*). A visit early the next morning confirmed this. The bird was heard many times, was seen on a tree trunk at short range, and was seen in noisy, cackling flight showing the characteristic white of the wings. A second bird was heard, but not seen. A week later, accompanied by Rheinhold L. Fricke and H. H. Elliott, we made a search for nesting operations. The bird was again seen and heard. Fresh workings on chestnut trees and stumps were found, also older workings indicating residence for several seasons. Many holes were examined but no actual nest was found; perhaps because this bird usually nests several weeks earlier.—SIDNEY K. EASTWOOD, *Pittsburgh, Pa.*

Unsolved Problems Concerning Upper South Carolina Birds.—In my efforts to trace more accurately the zone boundaries in the southern foothills, and list several species not before catalogued, several important problems have presented themselves. Why the abundance of Loggerhead Shrikes in the foothills in winter, and so few nests in summer? Why is the presumably northern Orchard Oriole so rare in the Upper Piedmont, though commonly nesting in the Lower? Have we here a southern race in the making? Are not the Meadowlarks reported to me as nesting in the Piedmont really members of the southern race pushing into the dividing territory between the two races, rather than strag-

glers from the winter migrants from the north? To what extent do the larger rivers bring down the northern zones into the zones below, and do the thermal belts along the valley sides carry the southern zones northward? Year-round observations might add additional races for the following: Barred Owl, Pileated Woodpecker, Nighthawk, Blue Jay, Red-winged Blackbird, Grackles (*Quiscalus*), and possibly others. By far the most of my observations were perforce near the mountains, and must show that influence strongly.—A. L. PICKENS, *Berkeley, Cal.*

Banditry Among Birds.—Observing Robins when feeding on the ground, you will sometimes see one or more English Sparrows hopping around near them, and when the Robin finds a worm they will walk up to him quietly and boldly, take it out of his mouth, with scarcely a protest from the Robin. A few days ago I saw a sparrow take a worm out of a Robin's mouth and fly off with it, and the Robin simply went on hunting for another one. Then again I saw another Robin pull out a worm and a sparrow standing by tried his best to take it from him. The Robin would not give it up, but flew into a distant tree with the sparrow after him, but the sparrow failed to secure the worm this time. A neighbor of mine saw a Robin robbed six times of six worms, one right after the other, by a small flock of sparrows which had gathered around him, while the Robin kept on hunting for more worms.—HENRY A. PERSHING, *South Bend, Ind.*

Prairie Birds Seek the Shade.—On a recent trip through North Dakota, the writer noticed an interesting habit of certain prairie-nesting birds. During the intense heat of the afternoon numerous Lark Buntings (*Calamospiza melanocorys*) were found perching on the barbed wire fences. The birds were, however, sitting close to the posts and on the side opposite to the sun. Thus they took the advantage of the shade offered by the posts and kept out of the burning rays of the sun. A very few Chestnut-collared Longspurs (*Calcarius ornatus*) and one Western Mourning Dove (*Zenaidura macroura marginella*) were also resting in the same position. It seemed a well formed habit with the Lark Buntings, as was evidenced by hundreds of examples.—WILLIAM YOUNGWORTH, *Sioux City, Iowa.*

The Relation Between the Blue Jay and the Pin Oak.—Through watching the behavior of a tame Blue Jay (*Cyanocitta cristata cristata*) that first came to us with an injured wing on August 5, 1929, and that in good weather is free to come and go as it pleases, the discovery was made that it feeds on a small white grub enclosed in the acorns of the pin oak (*Quercus palustris*), and not on the acorns themselves. Taking the hint, we watched the other Blue Jays, and observed them also feeding on these grubs.

Henry D. Thoreau (Succession of Forest Trees, 1860) says, "I can confirm what Wm. Bartram wrote to Wilson, the ornithologist, 'The Jay is one of the most useful—these birds alone are capable in a few years time to replant all the cleared lands'". This was said in regard to the well known habit of the Blue Jays of burying acorns. And it also appears that, in addition to providing food for unborn generations of their kind in planting tree seeds and nuts, they help the trees by destroying the enemies of the acorns. Is it too much to think that this relation, approaching a true symbiosis, gradually began with the primitive ancestors of both forms of life, and has helped in the present biological success of both species? The oaks provide a great excess of acorns, many millions more during the life of the tree than the one acorn which will reproduce the

parent tree, but insurance that only a small proportion will be uesd for food by the birds is secured by the comparatively bitter taste. As a consequence this food is used principally in midwinter when little other is available.—E. C. Hoffman, *Lakewood, Ohio.*

A Young Pied-billed Grebe on Land.—On June 24, 1929, while helping my father on his farm, a neighbor called me concerning a strange bird that he had noted. On examination it proved to be a young Pied-billed Grebe (*Podilymbus podiceps*). The bird was about five inches long and quite active. It was found in the neighbor's back yard where it was moving about. There was no sign of injury to the bird. The nearest water was fifteen or twenty rods away, and I never have known grebes to nest or even remain there. However, across the road about three-quarters of a mile away is a small pond where grebes nest every year. The young this year (1929) left about June 14.

Whether this young bird had come from there or not, we can only speculate until some explanation of its origin as well as its leaving the water to travel about on land can be obtained.—Lawrence H. Walkinshaw, *Battle Creek, Mich.*

The Chestnut-sided and Other Warblers Nesting in Geauga County, Ohio.—I was much interested in Mr. Louis W. Campbell's notes on the nesting of the Chestnut-sided Warblers near Toledo, in the December, 1928, number of the Wilson Bulletin. My record of a nest of this species follows:

Chestnut-sided Warbler (*Dendroica pensylvanica*).—On May 27, 1919, I was standing in a clearing in a large wood, overgrown with briars and bushes, watching a troop of warblers. A pair of Chestnut-sided Warblers seemed interested in the crotch of a small beech. A short watch was rewarded by seeing the female bring nesting material. The nesting site had evidently just been selected.

I returned on June 12 and found the female at home. The nest was in a clump of scrubby beech, two feet from the ground and near the base of a large beech. The female refused to leave the nest until I touched her with my finger. The nest contained three well-incubated warbler eggs and one egg of the Cowbird. It was made of grasses and beech leaf calyces, lined with fine grass.

Other nesting pairs have been seen during breeding season but no other nests have been found. I consider them an uncommon resident.

Blue-winged Warbler (*Vermivora pinus*).—Uncommon, but not scarce. They are found on the outskirts of woods, nesting on the ground.

Golden-winged Warbler (*Varmivora chrysoptera*).—Rare. Only one pair noted during the breeding season. The nest could not be found.

Yellow Warbler (*Dendroica aestiva aestiva*).—Our most abundant summering warbler. It prefers small valleys, nesting in thorn bushes.

Cerulean Warbler (*Dendroica cerulea*).—Rare. No breeding record.

Ovenbird (*Seiurus aurocapillus*).—The nest of this common warbler can always be found not far from where the male is singing. I found a beautiful nest on June 3, 1928. This nest was very compact and had a trail of leaves laid one foot from the opening of the nest. The female bird sits very close. I nearly stepped on the nest to flush her. It contained five well-incubated eggs.

Water-Thrush (*Seiurus noveboracensis*).—I feel certain that this species nests about Bass Lake. The Water-Thrushes there have a decidedly different song than the song of the Louisiana Water-Thrush. I have not noted this species anywhere else in the county. I intend to collect a few Bass Lake specimens next summer to verify my observations.

Louisiana Water-Thrush (*Seiurus motacilla*).—Uncommon but found throughout the county in wet woods. The nest is very hard to find, and I have no record of one. The song is different from that of the Bass Lake birds in that it is not one continuous warble but is separated into three parts—"*chea-chea-chauncer-van-tweer*".

Maryland Yellowthroat (*Geothlypis trichas trichas*).—A common inhabitant of wet meadows and swamps. The nest is very hard to find.

Yellow-breasted Chat (*Icteria virens virens*).—I have found but three nesting pairs in the county in fifteen years of observation.

Hooded Warbler (*Wilsonia citrina*).—In general scarce, but common in favorable localities. Being a rather quiet and retiring bird during the breeding season, their presence is commonly overlooked. They are found in heavy timber where there is a dense growth of young trees. A nest found June 11, 1924, in a three to five year old maple, two feet up, in a grove of small maples, near the edge of a large wood, contained four fresh eggs. The female disclosed the proximity of her nest by her call note of alarm. Lying down on the ground beneath the lowest leaves, I quickly spied the nest about twenty-five feet away.

Redstart (*Setophaga ruticilla*).—Common but not as numerous as the Oven-bird. They nest in open woods of small timber. The nest is often placed in a small dead tree. In fact, one-half of the nests found of this species by myself have been so placed. Fresh eggs may be found by June 1.

For those who are not familiar with the location of Geauga County, a brief description is here given. The county is hilly (the "Berkshires" of Ohio) with an elevation of 1320 feet above sea level, and 700 feet above Cleveland. The county seat is Chardon, thirty miles east of Cleveland and fifteen miles from Lake Erie. Considerable timber remains. Very heavy snows occur in winter. The making of maple syrup is an important springtime industry.—Lyle Miller. *Sharline, Ohio.*

The Mockingbird Breeds in Iowa.—As a rule ornithologists have not heretofore regarded Iowa as being situated within the breeding range of the Mockingbird (*Mimus polyglottos polyglottos*). It seems, however, that the range of this bird is gradually extending northward. Keokuk County, the scene of my observations, is located in the third tier of counties from the south line of the state, and Sigourney, the county seat, is situated about fifty miles north from the northern boundary of Missouri.

In the autumn of 1914, a competent observer informed me that a pair of Mockingbirds had that season made their nest in an orchard near Martinsburg in the southern part of this country. I was unable to learn anything further of this bird's presence here until the season of 1926, when a man who had formerly lived in Missouri and was quite familiar with the Mockingbird, reported a pair as nesting near South English in the northern part of this county. On April 24, 1927, I saw one of these birds near the western limits of this city. Owing to the large amount of clear white upon is wings and the absence of the brown, I took this to be a male. Subsequent visits at or near the place failed to disclose any further trace of it. On April 28, 1928, Mr. J. B. Slate saw one of these birds near South English, but careful search made at and near the same place later likewise failed to show anything further of it.

On May 14, 1929, I saw one of these birds four blocks from the County Court House in Sigourney. It appeared to be associated with some pigeons for

a few moments, then disappeared among the shrubbery and was not seen at this place again. On the evening of July 18, Mr. Slate informed me that, a few hours before, he had seen a Mockingbird alight upon the telephone wires by the side of State Primary Road No. 2, seven miles west from here. That being near an ideal locality for these birds, and considering the time of year, it certainly indicated that a nest might be found near there. We decided at once to go back there in the near future to make an investigation.

The evening of July 22 found us motoring toward the spot. When we arrived near, we noticed one Mockingbird again on the wires. It was evidently the male, and flew in the oposite direction from the one in which we were going. After moving ahead about 200 yards we stopped, and as we were getting out of the car a second bird also alighted upon the wires directly opposite us, and she held a grasshopper in her bill. This was certainly getting interesting! Our search was evidently going to be short.. She eyed us curiously for a while. Although a thousand or more cars passed this place every twenty-four hours, this one had stopped dead still. It seemed to puzzle her. After considering us for a few moments she flew to a mullen stalk about 100 feet away, then back to another point on the wires.

In the meantime, we had noticed a scraggy bush on a high bank by the fence on the opposite side of the road, and directly under the gang of telephone wires. This bush held the nest, which was about four feet from the ground and could plainly be seen about 100 feet away. After she had decided that our mission was of a peaceful nature she flew to the nest and dropped the "hopper" into one of the open mouths which instantly darted up to meet her. During the hour which we spent there she skirmished around in every direction and brought a bug or grasshopper to her hungry family every minute or two. Several times she flew out in the vicinity where we had seen her mate, but he did not return with her.

There were larger and much denser thorn bushes near by, and brush thickets and woods not far away, but for some reason known to the birds they chose the exposed place where automobiles and other vehicles passed within fifteen or twenty feet every few seconds. The fact that many of these vehicles also raised great clouds of dust and in the night time threw a glare of their headlights full upon the nest, likewise did not deter the birds from choosing this spot for their home. Undoubtedly, a nest thus placed is less likely to be discovered and robbed by birds of prey or marauding animals than one placed in a forest or thicket.

A trip to the nest on the morning of July 28 indicated that the young birds had evidently just left the nest and were hidden in the grass. The mother bird was greatly excited. She hopped and danced about on the wires and repeatedly darted down to within a few feet of the car windows, at a small dog which she had spied inside, scolding him all the time and calling him all kinds of uncomplimentary names. On the evening of the next day, we were back again and now found several of the young birds twenty or twenty-five feet up in an elm tree about 150 yards from the nest. Here the mother was bringing beetles, crickets, and grasshoppers as before. The wing and tail feathers of the young birds were, however, in such an undeveloped condition that it seemed they must have covered the intervening distance, which is open pasture land, mostly on foot. The tree where they were found is partly festooned with vines and by

means of these the birds had no doubt attained their altitude. During all the visits we made, we saw very litle of the male bird. He brought no food to the young and owing to the lateness of the season we did not hear his wonderful song.

The Mockingbird has been seen as far north as Sioux City, and a nest was found in Polk County, Iowa, between Valley Junction and Des Moines in June, 1929. I believe, if this bird is not known to nest in other localities of southern Iowa, it is probable that it does and this State may claim the Mockingbird as one of its regular avian summer residents, though rare as yet.—E. D. Nauman, *Sigourney, Iowa.*

Two Notable Minnesota Duck Records.—In a list of the birds observed during the period between May 15 and June 1, 1929, which was spent with the water birds in western Minnesota, is included the European Baldpate (*Mareca penelope*) and the Fulvous Tree Duck (*Dendrocygna fulva*). First state records for these species cannot be claimed, as the specimens were not collected, but the positiveness with which the identifications were made prompts the publication of the records as a matter of general interest.

A pair of Fulvous Tree Ducks were seen on a small, reedy lake near Arco, Lincoln County, in the southwestern corner of the state, on May 24. They were first observed resting on a muskrat house some 200 yards from shore, along with a number of individuals of nine other species of ducks. Specimens of this species had been observed in several of the eastern zoological gardens during the previous winter, and the birds were recognized instantly. The southwestern range of the bird being known, however, it was with some hesitation that the first impressions were accepted, and a half hour was spent in studying the birds with a pair of 16x glasses mounted on a light metal tripod which were carried as an aid in sketching. During this half hour of close scrutiny, several sketches of the birds were made, indicating the color and such positive field marks as the bright cinnamon-brown color, the long goose-like legs, the black stripe down the back of the neck, and the prominent light edgings on the side feathers, which were clearly distinguished. After a time the birds left the muskrat house and fed in the shallow, open water between the patches of bulrushes. It was observed that in feeding they dived like the Lesser Scaup Duck, showing the large legs and feet. They remained under from ten to fifteen seconds, then came up again almost in the same spot, after the manner of Coots. The other ducks gave every indication of nesting, and the lake was thoroughly examined several times during the next few days, but the birds had apparently moved on. The unusualness of this record leads one to suspect that these birds might have been escapes from some aviary, and, if this is the case, information regarding it would be welcomed.

On June 5 a lone male European Baldpate was found on Twin Lakes, Kittson County, in the northwestern corner of the state. It was in the company of a number of our common shallow water ducks that were breeding in this large, reed-grown lake. A view of it was obtained with the 16x glasses and a sketch made indicating the colors. The reddish head and the white flank, the latter like our own Baldpate, were very prominent, as was the pale buffy stripe over the top of the head. An attempt was made to approach it, but it was the first bird to fly, and, circling high, disappeared west over the other lake.—W. J. Breckenridge, *Museum of Natural History, Univ. of Minn., Minneapolis, Minn.*

Observations at a Nest of Myrtle Warblers.—On July 25, 1927, a nest of the Myrtle Warbler (*Dendroica coronata coronata*) was found at Grey Rocks, Pelham, Massachusetts, by Miss Lucille Baker, six feet up in a small red cedar on a branch next to the trunk. It was a rather shallow affair, composed of cedar twigs and bark, plant fibers, a piece of string and pine needles, and was lined with a few horse hairs and many Ruffed Grouse feathers. Inside were three newly hatched young. I watched the nest for fourteen hours on July 27, 28 and 29 and Miss Baker watched it for five and one-half hours on July 30, August 1 and 2. The observer sat in full view, within seven feet of the nest (on account of the sloping and rocky nature of the ground it was not convenient to be nearer), but the parents did not object in any way.

On July 28 the female brooded twenty-five per cent of the time during six and one-half hours of observation, but on the following day only nineteen minutes were spent thus during six and three-fourths hours. The brooding periods averaged nine minutes. A great deal of her energy was expended in delousing the nest—thirty-six minutes on July 28 and seventy-four minutes during the forenoon of the next day, but after that there was little trouble. Once, during thirteen minutes she made over 250 captures, all of which she ate. Curiously enough after one session of burrowing about, she tugged at a feather in the lining, pulled it out and flew away with it.

The male brought food sixty times, the female forty-eight times, so that the young were fed once in 10.9 minutes. About one-third of the time the male brought two insects, while the female did so on about one-sixth of her trips. During the fourteen hours of observation, the male brought food once in every nineteen minutes, the female once in every twenty-eight minutes. During the last five and one-half hours, the male brought food once in twenty-two minutes, the female once in eighteen minutes.

Often the young had difficulty in swallowing the large portions brought them. Once the female, after vainly presenting a round fat beetle to three young, took it to the ground. She shortly returned and at last disposed of the creature. On July 28, she was cleaning house, but hopped up above the nest upon the arrival of the male. For some time he worked with a large caterpillar, withdrawing it again and again from the throats of the young. The female came down to the nest rim and opened her bill. The male gave her the larva, and she held it while he pulled. She let go and he made another attempt to get it swallowed but had to manipulate it some more, his mate in the meantime standing with her bill open. However, it finally disappeared without further assistance from her.

The last feedings were watched on three evenings, the female settling down to brood for the night in each case. Sunset came at 7:15 P. M. on July 27, 7:14 on July 28, and 7:12 on July 30. The male's last feedings took place at 7:20, 7:08, and 7:16 P. M., respectively, the female's at 7:35, 7.24, and 7:31 P. M.

Excreta were eaten by the female through July 29, but she carried one away at 7:05 P. M., July 28. She ate twelve sacs and carried eleven; her mate carried twenty-five and ate one. He had brought a white moth and put it in the throat of one of the young, but it had fallen out and down without his noticing it. He picked lice off his legs and gave them to the babies. He then left and returned in ten minutes with two green larvae. After these were disposed of, he took a sac and swallowed it, hopped up to his favorite branch

above the nest and from there descended until he reached the moth, which he ate himself.

On the afternoon of August 1 there was a hard rain for twenty-five minutes, but although the male brought two meals and the female three, there was no move on the part of the parents to shelter the young.

The next afternoon, one of the young climbed to the nest rim, and another to the branch, but both returned. August 3 at 7:30 A. M. the last fledgling was just leaving the nest, flying over a hundred feet at its first attempt. A week later the male was seen in the vicinity feeding a fully grown young bird.

The parents made no sound near the nest until August 1, when the female came toward the observer with a low "*tchip.*" The following afternoon when the young were getting out of and back into the nest, both parents became quite vocal, "*tchipping*" in nearby trees. Only ten songs were given by the male during the nineteen and one-half hours of observation.—MARGARET M. NICE, *Columbus, Ohio.*

Some Unusual Spring Records from Bibb County, Georgia.—The spring of 1928 brought an unusual number of new or rare bird records. Especially was this true of the water and marsh birds. Two facts may account for this. The spring has been unusually wet (the two previous springs had been very dry). Secondly, the local Isaac Walton League has been responsible for the establishment of a duck and game preserve in an old clay pit area south of town and near the river. Here, on February 11, Mr. Mounts and I saw two Red-shouldered Hawks, our first record of them for this region.

On May 12 was our most exciting trip to the clay pits. From far away a white heron was visible along the margin of one of the ponds. We watched this bird, hoping it would prove to be a Snowy Heron, but had to be satisfied with a young Little Blue Heron. Two full plumaged Little Blue Herons were also present. Near the herons were two Lesser Yellow-legs, and several more were scattered over the pond, one bird standing on one leg, the other one evidently badly injured. There were other waders of whose identity we were not sure. Along with the larger birds were six Least Sandpipers and one Semipalmated Plover. A pair of Blue-winged Teals swam about on the pond, and several times flew up, giving us a splendid view of the blue wing patches.

Not all of our rare records are from the clay pit region, however. On April 29, a House Wren appeared in our back yard and was seen, or heard in full song, for several days. This is a late record, and our first of the bird in song.

Not far from our home is a meadow, separated from the river by a low ridge. Two tiny streams run through the meadow, and in wet seasons there are several reedy, marshy patches. This year the Bobolink appeared there on May 1 and remained until May 12. Many years we do not see it at all. Here also we secured records of the Green Heron, King Rail, Short-billed Marsh Wren, and Purple Gallinule. The Purple Gallinule displayed an interesting habit. When flushed it flew to a tall tree bordering the marshy ground, and climbed higher and higher, hiding near the top, and evidently slipping out when not closely observed.

The most exciting record of the year came May 13. We had taken a friend to see the Bobolinks, which the day before were abundant and in full song. They had disappeared over night. A bird which at first glance I thought was a bob-tailed Red-wing flew up from a marshy spot and dropped down to the

ground where vegetation was short, so that its head was visible at a distance of thirty yards or more. We watched it first with a pair of eight power prism binoculars, and approached nearer and nearer, until finally two of us were within three feet of where the bird rested on the ground. It remained quiet for over a minute before flying away and dropping into the tall grass. None of us knew it. It was about five inches long and we could see plainly the red iris, slaty head and neck, reddish brown nape, dark wings and back spotted with white, and stubby tail. Comparison with the plates in the "Birds of New York" left no doubt that the bird was the Little Black Rail (*Creciscus jamaicensis*).—Beryl T. Mounts, *Macon, Ga.*

Some Odd Nesting Sites of the House Wren.—Some years ago my family and I lived upon and operated a farm near Thornburg, Iowa. Among the customary farm buildings was one for the implements and machinery used upon the farm. This machine house was open at the south side, no door or wall having been placed on that side.

We had made no special provision for nesting places for the Western House Wrens (*Troglodytes aedon parkmani*), but they looked up places for themselves and we always had at least one pair on the premises every summer. One fine May day I went into the implement house to prepare a machine for work in the field. While so engaged a House Wren came and alighted on my arm. In a moment the other of the pair alighted on my hat. Both were chattering at me vociferously, calling me all kinds of names and demanding to know what I meant by invading their premises in that manner. They were in no hurry to leave me and during most of the time I spent in the machine house that day they were on my clothing.

After this whenever I had occasion to go to the machine house, that summer, the wrens always came and perched on my clothing. This action of theirs struck me as somewhat peculiar, for although these little birds had been familiar to me all my life, I had never known them to do this before. But the reason for this familiarity became perfectly plain when I discovered their nest. I had hung up an old overcoat in this building the previous winter and left it there. The wrens had found one of the pockets of this coat to answer their purposes and made their nest therein. And since, as is well known, these birds scarcely ever make their nest for the second brood of the season in the same place, so they went "presto chango" into the other pocket for the second brood!

More recently I found a House Wren's nest in a joint of gas pipe twelve feet long, one and one-half inches in diameter and slightly bent in the center. This piece of gas pipe was balanced over the lower board of a fence so that both ends of the pipe were lower than the center. The ends were about eighteen inches from the ground, and the wrens entered at either end as happened to suit their convenience.

The past season (1928) I discovered a House Wren's nest under a quart tin can that had been carelessly turned over the top of a post in the garden fence. The post had been chopped off slanting at the top, and enough had been split off on one side so that it left a space three-fourths of an inch between the post and the side of the can. Through this narrow opening the birds had carried up the nesting material and made the nest in the triangular space on top of the post. But unfortunately the can was lifted off and the nest and eggs were precipitated to the ground by some one who was not aware of the wrens'

presence. Had this accident not occurred, it seems to me the birds must certainly have been fried under this tin can with the unbroken rays of the June sun beating down upon it.—E. D. Nauman, *Sigourney, Iowa.*

Some Bird Notes from Trumbull County, Ohio.—Notes on the following four species of Ohio birds are herewith presented:

Wilson's Snipe (*Gallinago delicata*).—This species was observed on December 30 and 31, 1925, at Norton's ravine, at the edge of the village. Following the first zero weather of the season, this snipe flew into the ravine from the north on a bright sunny afternoon. The ground was frozen hard, so that the bird was obliged to feed in the spring-fed brook, where it stood for about twenty hours, either probing diligently or resting quietly. Once when probing in the center of a quiet pool, the bird's head was partially submerged in the ice-cold water, the vigorous action of the head and bill causing ripples across the water.

The following March 4 to 9, inclusive, a Wilson's Snipe was again seen feeding in the same locality. Since this was early for a migrating bird of this species, it might have been the individual ovserved the preceding December, since springs abound in this region. A snipe was again seen on December 10 and 17, 1926, but there was no record during 1927. S. V. Wharram has found the Wilson's Snipe breeding sparingly in the next county north (Ashtabula), but he has no winter record. Mr. Kendeigh informs me that the latest Oberlin record is for the last of November.

Cardinal (*Cardinalis cardinalis cardinalis*).—This species first appeared at North Bristol in 1899, and has been a permanent resident and fairly common bird since then. It appears most commonly in the village during the winter, retiring in the spring to the adjacent Baughman Creek valley to nest. It has tried to nest near houses but has been discouraged by its enemy the Blue Jay.

Prothonotary Warbler (*Protonotaria citrea*).—A pair of this species spent four days at Norton's ravine May 12 to 16, 1925. (See Wilson Bulletin, XXXVII, p. 225).

Carolina Wren (*Thryothorus ludovicianus ludovicianus*).—Appeared here in April, 1924, and remained in the vicinity until February, 1926. No nest was discovered. Because of its arresting song the bird attracted almost immediate attention, even from people not particularly interested in birds. One bird located in the village in the fall of 1925 and traveled from one yard to another, hunting on window sills, in out buildings and brush piles. It sang regardless of weather conditions until it disappeared about the middle of the following February. The winter had proved unusually snowy.—Marcia B. Clay, *North Bristol, Ohio.*

A Nesting Census in Jackson County, Michigan.—The writers took a nesting census on July 6, 1929, in Jackson County, Michigan. Jackson County is located in the south-central part of the state. The method of taking the census was essentially that of the Biological Survey. Briefly, the census found 360 pairs of 66 native species nesting within the area. Due to judicious use of the shotgun, but one pair each of English Sparrows and Ring-necked Pheasants were found.

The Grand River rises in the hills of the southern part of the county and leisurely flows northward, forming the Grand River Valley. The Grand River Valley is a narrow, heavily timbered valley. Tributary to the Grand River, and flowing southwest from the northeast corner of the county, is the Portage River, about the same size as the Grand River. The Portage River, rising in Portage

Lake, is a sluggish stream winding through an immense open muck marsh, the Portage Marsh.

The census area is located in the center of the county and at the junction of these two rivers. As the open marsh heads into the timbered bottom lands of the Grand River, here, we have both open marsh and timbered lowlands. The upland is almost level, and is composed of cultivated fields and pastures ranging from sandy loams to clay loams. The census area contains 235 acres of this upland and lowland, but the census was taken almost wholly within the thirty acres bordering the Portage River.

Species	Pairs	Species	Pairs
Bittern	1	Red-winged Blackbird	52
Green Heron	1	Meadowlark	2
King Rail	1	Baltimore Oriole	2
Virginia Rail	1	Bronzed Grackle	12
Woodcock	1	Goldfinch	9
Wilson Snipe	1	Vesper Sparrow	7
Spotted Sandpiper	2	Savannah Sparrow	2
Killdeer	3	Grasshopper Sparrow	1
Bobwhite	25	Henslow's Sparrow	2
Prairie Chicken	2	Chipping Sparrow	3
Mourning Dove	6	Field Sparrow	3
Marsh Hawk	1	Song Sparrow	21
Red-shouldered Hawk	1	Swamp Sparrow	5
Screech Owl	1	Rose-breasted Grosbeak	1
Yellow-billed Cuckoo	1	Indigo Bunting	2
Black-billed Cuckoo	1	Purple Martin	6
Belted Kingfisher	1	Barn Swallow	6
Hairy Woodpecker	1	Bank Swallow	10
Downy Woodpecker	2	Rough-winged Swallow	2
Red-headed Woodpecker	1	Cedar Waxwing	1
Northern Flicker	1	Warbling Vireo	5
Chimney Swift	2	Yellow Warbler	10
Ruby-throated Hummingbird	1	Maryland Yellowthroat	9
Kingbird	2	Catbird	14
Crested Flycatcher	4	Brown Thrasher	3
Phoebe	4	House Wren	4
Wood Pewee	2	Short-billed Marsh Wren	11
Least Flycatcher	21	Long-billed Marsh Wren	21
Prairie Horned Lark	2	White-breasted Nuthatch	1
Blue Jay	3	Black-capped Chickadee	2
Crow	1	Wood Thrush	2
Bobolink	7	Robin	15
Cowbird	8	Bluebird	2

LEONARD W., GEORGE S., HAROLD F. AND MAURICE WING, *Jackson, Mich.*

Birds Noted on a Visit to Santa Cruz Island, California.—On September 1, 1928, the writer and sixty members of the Nature Club of Southern California steamed across the channel to "Pelican Cove" on Santa Cruz Island, the most beautiful and the largest island of all in the channel, being twenty-one miles long in an east and west direction, with an average width of five miles, and a peak 2407 feet high. The eastern part is very irregular, barren and almost destitute of water. The western part, however, is, in certain localities, especially near Prisoners Harbor, plentifully besprinkled with forests of Santa Cruz Pine, which in the higher parts gives a distinctly boreal impression. At the lower edge of the pines are oaks and considerable grass lands, so that sheep raising and grape and vegetable farming are the principal activities of a few resident

folks on Santa Cruz Island. The larger canyons are well wooded and the darker retreats show marvelous growths of ferns and wild flowers, many of them in full Bloom through August. There are several varieties of deciduous trees, some of them quite large, and there is good water in many of the canyons. This would naturally harbor birds and insect life.

Excursion boats, yachts and launches cruise around the island, so that Santa Cruz Island is rapidly becoming a popular resort for the adventurer and the nature lover. Good camping spots with bathing beaches can be found almost anywhere. A few wild pigs have been noted and the boars are very wild and dangerous. House cats run wild, and there are some island foxes (*Urocyon littoralis santacruzae*), though the latter are not as plentiful as formerly.

We spent three days roaming here and there in selected groups. The writer and Dr. Hoffman of Santa Barbara, Elbert Benjamine, and Mrs. A. B. Maescher were there to record birds and to get motion pictures of sea lions (*Zalophus californianus*). Thousands of these were observed on the ledges basking in the sun at the far southwestern end of the island, and upon our intrusion they would go lumbering into the sea barking furiously.

The following forty-two species of birds were listed on this excursion:

Western Grebe (*Aechmorphorus occidentalis*).
Eared Grebe (*Colymbus nigricollis californicus*).
Pacific Loon (*Gavia pacifica*).
Western Gull (*Larus occidentalis*).
Heermann's Gull (*Larus heermanni*).
Pink-footed Shearwater (*Puffinus creatopus*).
Black-vented Shearwater (*Puffinus opisthomelas*).
Sooty Shearwater (*Puffinus griseus*).
Black Petrel (*Oceanodroma melania*).
Ashy Petrel (*Oceanodroma homochroa*).
Farallon Coromorant (*Phalacrocorax auritus albociliatus*).
Brandt's Cormorant (*Phalacrocorax penicillatus*).
California Brown Pelican (*Pelecanus californicus*).
White-winged Scoter (*Oidemia deglandi*).
Great Blue Heron (*Ardea herodias herodias*).
Northern Phalarope (*Lobipes lobatus*).
Least Sandpiper (*Pisobia minutilla*).
Wandering Tattler (*Heteractitis incanus*).
Black Oystercatcher (*Haematopus bachmani*).
Valley Quail (*Lophortyx californica vallicola*).
Western Mourning Dove (*Zenaidura macroura marginella*).
Western Red-tailed Hawk (*Buteo borealis calurus*).
Bald Eagle (*Haliaeetus leucocephalus leucocephalus*).
Belted Kingfisher (*Ceryle alcyon*).
Red-shafted Flicker (*Colaptes cafer collaris*).
Allen's Hummingbird (*Selasphorus alleni*).
Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*).
Black Phoebe (*Sayornis nigricans*).
Western Flycatcher (*Empidonax difficilis difficilis*).
Island Horned Lark (*Otocoris alpestris insularis*).
Santa Cruz Island Jay (*Aphelocoma insularis*).
Raven (*Corvus corax sinuatus*).
San Clemente House Finch (*Carpodacus mexicanus clementis*).
Western Lark Sparrow (*Chondestes grammacus strigatus*).
Gambel's Sparrow (*Zonotrichia leucophrys gambeli*).
Santa Barbara Song Sparrow (*Melospiza melodia graminea*).
San Diego Towhee (*Pipilo maculatus megalonyx*).
Island Shrike (*Lanius ludovicanus anthonyi*).

Dusky Warbler (*Vermivora celata sordida*).
Western Mockingbird (*Mimus polyglottos leucopterus*).
Rock Wren (*Salpinctes obsoletus obsoletus*).
Coast Bush-tit (*Psaltriparus minimus minimus*).

ALFRED COOKMAN, *Los Angeles, Cal.*

The Starling in Northwestern Arkansas.—A Starling (*Sturnus vulgaris*) was observed on the University of Arkansas campus at Fayetteville, Washington County, on January 25, 1930. The bird was secured for a specimen. I believe this is the first record for Arkansas.—W. J. BAERG, *Fayetteville, Ark.*

The Starling in Pettis County, Missouri.—The Starling (*Sternus vulgaris*) was recently observed about seven miles west of Sedalia, Pettis County, Missouri. It was about a farm lot, and was observed at close range. So far as I know this is the first record for this region.—CHARLES A MCNEIL, *Sedalia, Mo.*

The Starling in Tulsa County, Oklahoma.—The first Starling (*Sternus vulgaris*) known to have been collected in Oklahoma, was taken ten miles south of Tulsa, Tulsa County, on the Peoria road near the Arkansas River, December 18, 1929, by Mr. and Mrs. A. E. Gilmore. The bird was a male, and the specimen is now in their general collection.—MR. AND MRS. A. E. GILMORE, *Tulsa, Okla.*

The Starling in the Missouri Ozarks.—On December 18, 1929, the first real winter reached us in southwestern Missouri, with several inches of snow, and with temperatures as low as four degrees below zero. On the late evening of December 19, I was making the rounds of my bird traps, when in a small wood-lot about a quarter of a mile from the house I heard and saw a very odd-appearing bird flying from tree to tree. About mid-morning of the 20th, the next morning, I went to my basement to look out at a couple of bird traps which I had close to the house. Sitting between the trap and the basement window on the south side of the house were four Starlings (*Sturnus vulgaris*), busily engaged eating the extra bait that was scattered about. I followed them about for over an hour, and finally left them in the woods close to the spot where I had first seen them on the afternoon before.

On Sunday, December 29, 1929, the Springfield Daily News carried a write-up from West Plains, Missouri, some 175 miles to the east, stating that Mr. F. M. Francis of that city had found a dead Starling in his chicken coop, presumably on the morning of December 27. Identification was made by Mayor Harlan of West Plains, and from the very good description given, there can be no doubt of its correctness.—JOHNSON A. NEFF, *Marionville, Mo.*

The Starling in Oklahoma.—During the winter of 1929-30 the Starling (*Sturnus vulgaris*) has appeared for the first time in three localities in Oklahoma. *Tulsa.* In the latter part of November Mr. C. L. Dewey of the Chamber of Commerce reported a flock of seventy-five to eighty Starlings on the east bank of the Arkansas River, opposite 55th Street. On December 18, Mr. A. E. Gilmore collected a male out of a flock of about sixty-five, ten miles south of Tulsa. A flock, presumably the same, was seen in this general locality (on the road between Sapulpa and Bixby) on December 1 by Harold A. Graham. The above information was kindly given by Miss Edith R. Force of Tulsa. *Oklahoma City.* Mr. Marsh B. Woodruff, Assistant State Game Warden, reports that a ranger, while looking over a hunter's bag on Lake Overholser, the city reservoir, on

November 3, found that the man had shot several Starlings which he thought were blackbirds. A specimen was secured and is now mounted in the museum of the State Game Department. *Norman.* A flock of fifteen Starlings sought shelter in some cedar trees on the farm of Mr. H. Hefley in the suburbs of Norman. One of these was picked up dead on January 18, 1930, and is now in the Museum of Zoology of the University of Oklahoma. The flock was still present on January 28.—R. D. Bird, *University of Oklahoma, Norman, Okla.*

The Starling in Hancock County, Illinois.—On January 17, 1930, a single male specimen of the Starling (*Sturnus vulgaris*) appeared at the home of Prof. O. A. Boatman. The specimen was presented to the museum of Carthage College. On January 24, Mr. Howard Swartz and Mr. Charles Walker each brought a specimen for the same museum. Mr. Swartz has reported two small flocks numbering not more than a dozen birds, each of which appeared on January 27 and 28 near the college campus. These birds were in a famished condition, several being scarcely able to fly, due no doubt to the severe winter conditions prevailing.

Having searched the records from this vicinity, compiled by Dr. F. C. Gates and Prof. A. V. Arlton, as well as my own, covering a period of fourteen years, I have found no previous mention of the Starling in Hancock County. Other bird enthusiasts of this region also report it a newcomer to this locality.—Earl L. Lambert, *Carthage, Ill.*

The Starling in Kalamazoo County, Michigan.—The first record of a Starling (*Sturnus vulgaris*) in the vicinity of Vicksburg, Kalamazoo County, Michigan, was on December 16, 1924, when a single bird was captured in a silo one and one-half miles northeast of Vicksburg. In March of the same year four birds made regular visits to a feeding station in the western part of the village. None were seen here during the summer of 1925, but each winter thereafter they appeared in increasing numbers. On December 23, 1928, I came upon a flock of seventy-five, feeding on apples in an old orchard. The following summer (1929) they were occasionally seen, and one pair is known to have raised a brood of young. On December 22, 1929, another large flock of sixty birds made their appearance in the village, so no doubt the Starling is fairly well established in this locality.—F. W. Rapp, *Vicksburg, Mich.*

[Editor's Note. A large amount of material on the Starling distribution came in too late to be edited for this issue, although it is all embodied in the map on the inside cover page. We hope to be able to present all this material in condensed form, along with other information which may come in. Two things must be kept in mind, viz., the winter range and the breeding range].

PROCEEDINGS OF WILSON ORNITHOLOGICAL CLUB

By Jesse M. Shaver, Secretary

The Sixteenth Annual Meeting of the Wilson Ornithological Club was held at Des Moines, Iowa, on December 27 and 28, 1929, and in conjunction with the general sessions of the American Association for the Advancement of Science. Something like 3,000 lectures and scientific papers were presented at the sessions of the American Association and its affiliated and associated societies. The W. O. C. meeting was made especially enjoyable through the hospitality of the Des Moines Audubon Society and the Iowa Ornithologists' Union. In many respects this meeting was the most interesting and successful one in the history of the organization. The headquarters of the Club was made at the Hotel Savery, while the business and program sessions were held in the auditorium of the Des Moines Public Library. The annual dinner was held on Saturday evening, December 28, at Younker's Tea Room.

Business Sessions

The business sessions were held on December 27 from 9:15 to 9:45 A. M., and on December 28 from 12:00 to 12:30 P. M., and from 5:00 to 5:30 P. M. Council meetings were held Thursday and Friday evenings, December 27 and 28, from 7:30 to 11:00.

The Council considered on Thursday evening methods for increasing membership. The Secretary outlined plans for securing nominations from our present membership, for follow-up letters, for a Membership Committee to be selected with care by the Secretary to work with him in building up the membership. The Secretary was authorized to go ahead with the selection of the Committee and with his plans as outlined. The work of the Endowment Committee was considered and plans discussed for more active work during the coming year. The Friday evening session of the Council was devoted to a very careful revision of the new constitution to be presented to the Wilson Ornithological Club on Saturday.

At the business sessions, the Secretary's report of the last annual meeting was approved without being read since it was published in the March, 1929, number of the Wilson Bulletin. The officers reported briefly on their activities with the exception of the Vice-President who was away on an arctic expedition.

The Editor presented a tabulation of figures showing itemized costs of each issue of the Wilson Bulletin during the past five years. From these figures the cost of each volume for these years was ascertained. The average cost per volume for the last five years was $1.15, but the cost of the volume for 1929 was $1.39. (In order not to misinterpret these figures it should be remembered that we print about 200 copies more than are immediately distributed. This means an outlay of between two and three hundred dollars a year for which there is no corresponding income. This cannot be avoided, and perhaps no one would wish to, even if some slight economy would result). The Editor pointed out that stamps had to be affixed to each Bulletin mailed for local delivery. Hence, the cost of sending a magazine to a member in Sioux City is just the same as to send it to Europe, or any other country. The Editor recommended, therefore, that no extra sum for postage be added to the dues of *members* who reside outside the United States. The Chair hereupon ruled that

such was his interpretation of the Constitution. Foreign *subscriptions*, however, are to remain at $2.00.

The Treasurer's report was received in a brief form and was referred to an Auditing Committee for consideration together with the other papers from the Treasurer's office. This report with a statement from the Auditing Committee is published elsewhere in this number of the BULLETIN. The Secretary's report was read and accepted. There was a total of 748 members of all classes, but 31 were delinquent for 1929 dues. They will be dropped this year unless their dues are paid shortly.

The Committee on Endowment regretted its relative inactivity this year, due in part to the death of one of its members and the long illness of another. This Committee was continued for another year with A. F. Ganier as Chairman. No one was appointed to take the place on the committee of Thos. H. Whitney, deceased.

Prof. Myron H. Swenk reported for the Committee on Revision of the Constitution by reading a new constitution partly prepared by the Committee but thoroughly reviewed and revised by the Council. It was tabled for one year in accordance with the procedure provided in our present constitution.

The sixty-five new members, consisting of 15 active and 50 associate members, presented by the Secretary were elected, as were 12 additional active and 6 additional associate members nominated at this meeting. The names of these new members will appear in the new directory of members to be published in June. Two new life members, Miss Althea R. Sherman and Mr. W. I. Lyon, were announced.

The Secretary was instructed to send through radio station KDKA, of Pittsburg, the greetings and best wishes of the Wilson Ornithological Club to our Vice-President, George Miksch Sutton, who is spending the winter close to the Arctic Circle.

A Committee on Honorary Members, consisting of Messrs. T. C. Stephens and A. J. Palas, was appointed at the first session. Because of their contributions to the science of ornithology and because of their loyalty to the Club the Committee recommended the election of the four Founders, Dr. L. Otley Pindar, Dr. Lynds Jones, Dr. R. M. Strong, and Mr. Franklin L. Burns, to Honorary Membership. Because of her long-continued studies on the habits of birds, her numerous published contributions, and her loyal support of the Club, the Committee recommended that Miss Althea R. Sherman be elected to Honorary Membership. The report of the Committee was unanimously adopted, and these five members were declared Honorary Members.

At the Ann Arbor meeting T. C. Stephens was appointed as Chairman of a Committee on the Establishment of a Research Library on Ornithology. This Committee was subsequently enlarged by the appointment of Mr. Frank C. Pellett and Prof. Myron H. Swenk. During the past year the Committee received definite proposals from the Museum of Zoology, of the University of Michigan, and from the Iowa State College, at Ames. The proposals were presented at the Des Moines meeting and ratified by vote. During the coming year it is expected that these agreements will be consummated legally, and that the libraries will then be ready for donations and bequests. The text of the agreements will be published in a later number of the BULLETIN.

The Committee on Resolutions, consisting of Prof. E. L. Moseley and Prof. James S. Hine, prepared appropriate resolutions thanking our hosts, the Des Moines Audubon Society and the Iowa Ornithologists' Union, for the hospitable manner in which they entertained the Club; the people of Des Moines for many courtesies; the press of the city for the excellent publicity which it gave to the meeting; the Des Moines City Library for opening its Auditorium to the Wilson Ornithological Club for the meeting; and especially the Club's very efficient local representative, Mr. Arthur J. Palas. The Committee also expressed the Club's appreciation of the long and untiring services which the retiring president, Lynds Jones, has rendered in one capacity and another throughout the life of the organization. The retiring Treasurer was also commended for his efficient activity in keeping the funds of the Club in good condition during his terms of office.

W. M. Rosene
The New Treasurer

The Committee on Nominations, composed of Messrs. A. F. Ganier and Myron H. Swenk and Mrs. H. J. Taylor, reported nominations as follows:

For President, J. W. Stack.
For Vice-President, George Miksch Sutton.
For Treasurer, Walter M. Rosene.
For Secretary, Jesse M. Shaver.
For Councillors,* Mrs. Margaret M. Nice, Lynds Jones, C. W. G. Eifrig, Albert F. Ganier, and Myron W. Swenk.

All of the nominees thus proposed were elected, and declared to be the officers for the ensuing year.

The Des Moines Audubon Society had independently arranged a most creditable exhibit of bird paintings. The exhibits were all conveniently hung on the walls of a large and well lighted room on the same floor on which the program meetings were held. We give below a list of the exhibiting artists with the titles of the works shown; there is some possibility that we have unintentionally omitted some of the items, since the exhibits extended all around the four walls of a very large room.

Mr. John L. Ridgway, 501 Fairmount St., Glendale, California. *Pileated Woodpeckers, Western Robins, Guadalupe House Finches, Cardinal, Rufus and Costa Hummingbirds, Rufus and Costa Hummingbirds and Accessories, Restoration of Parapava californicus.*

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*The first three names were presented by the Committee, the last two were nominated from the floor.

Mr. George Miksch Sutton, Bethany, West Virginia. *Wood Ibises*, (reproduced in Wilson Bulletin of last March), *Mallard, Kite, Grebes, Great White Heron.*

Mr. R. Bruce Horsfall, 3835 "S" St., N. W., Washington, D. C. *Violet Green Swallow, Steller Jay, Chinese Pheasant, Robin, Dove, Water Ouzel, Nighthawk, Towhee, Cowbird, Yellow-throat, Tree Sparrow, Black-headed Grosbeak, Whip-poor-will, Killdeer, Cardinal.*

Mr. Earl L. Pool, care of Public Museum, Reading, Pa. *Harpy Eagle and Spoonbill, Duck Hawk, Chickadee and Tufted Titmouse, American Oystercatcher, Roseate Tern, Prairie Falcon.*

Mr. O. J. Murie, care Biological Survey, Washington, D. C. *Pacific Eider flying. Hawk Owls at Mating Time, Savannah Sparrow, Willow Ptarmigan flying. Horned Puffin, Golden Eagle, Immature Pacific Eider, Immature King Elder. White-crested Cormorant* (the last five being field sketches).

Mr. Francis Lee Jaques, 515 Edgecombe Ave., New York, N. Y. *Cedars and Grey Geese, Tropic Sea.*

Mr. E. R. Kalmbach, care Biological Survey, Washington, D. C. *Crow, Florida Turkey, Great Horned Owl, Starling, Western Bluebird.*

Master Olin Kalmbach. *Wood Ducks.*

Mr. William Rowan, University of Alberta, Edmonton, Canada. *Juncos, Head of Horned Grebe, Young Whiskey Jay, Canada Crow.*

Mr. Ottomar Franz von Fuehrer, Carnegie Museum. *Toucans, Cockatoo.*

Major Allan Brooks, Okanagan Landing, B. C. *Pinon Jay, Hummingbirds, Pectoral Sandpiper, Song Sparrow, Head of Owl* (the last three being field sketches).

J. N. Darling, Des Moines and New York. Original of "Ding" cartoon "A plea for reduction of armaments".

The Des Moines Public Library also arranged a small exhibit of bird books, including "The Birds of America", 7 volumes, by John James Audubon, Philadelphia, 1840. The State Historical Society displayed a set of the Elephant Edition of Audubon's "The Birds of America"; and also the diary and bird paintings by William Savage, made during the early history of Iowa. One of the most interesting exhibits among the books was the first volume of a new work on the birds of North America. This work consists of paintings of birds by Mr. Rex Brasher, and is planned to illustrate every species found in North America. There are to be twelve volumes, each volume selling for $200. The volume here exhibited was shown and explained by Mr. Philip Brasher. Many of our members also visited the unique private museum of Mr. Ernest Brown, proprietor of the Brown Hotel. This collection consists mostly of fishes, and is reputed to be as complete as anything of the kind in existence: it contains many species of fishes not found in the great museums, and a few specimens which seem to be undescribed forms. Among the fishes are just a few birds, brought in incidentally, including a few Laysan Island birds, obtained from Prof. H. R. Dill.

The social features of the Des Moines meeting were unusually pleasant and enjoyable. The annual dinner was held at Younker's Tea Room. The menu and service on this occasion reached a high mark which will long be remembered by those present. Dr. L. S. Ross, of Drake University, was Toastmaster, and exercised his privilege with finesse and to the satisfaction of all. Prof. M. H. Swenk responded wittily in identifying the "Goofus Bird", but fortunately the old bird hooted before the speech was over, and identification was complete. Short speeches were made by Miss Sherman and Dr. Jones. Dr. Paul Bartsch, of the Smithsonian Institution, was also present and spoke briefly.

During the evening several reels of motion pictures, which had been postponed from the afternoon, were shown. Following these an original poem, entitled "Reflections", was recited by Mr. W. M. Rosene. Each verse was accompanied by a beautifully colored slide which appropriately illustrated the thought expressed. The dinner was attended by seventy-seven persons.

On Sunday afternoon, December 29, the Wilson Ornithological Club was pleasantly entertained at the beautiful home of Mr. and Mrs. Henry Frankel, by the Des Moines Audubon Society.

On Friday and Saturday the Club members lunched together at the Savery Hotel, giving opportunity for making new acquaintances and renewing old ones.

REGISTER OF ATTENDANCE AT THE DES MOINES MEETING, 1929

From CANADA: Prof. V. W. Jackson, University of Manitoba at Winnipeg. From CALIFORNIA: Mrs. H. J. Taylor, Berkeley. From DISTRICT OF COLUMBIA: Dr. Paul Bartsch, Smithsonian Institution; Dr. W. B. Bell, Bureau Biological Survey. From ALABAMA: Pauline Shepherd, Russellville. From ARIZONA: Dr. Walter P. Taylor, Tucson. From CONNECTICUT. Philip Brasher, Kent. From ILLINOIS: Miss Mary Bradford, Moline High School; Miss Ruth Marshall, Rockford College; Frederick L. Brown, Chicago; W. I. Lyon, Waukegan; Prof. G. Eifrig, Concordia Teachers College; Dr. W. C. Allee, University of Chicago. From INDIANA: Dr. Howard E. Enders, Purdue University. From KANSAS: Frank M. Alexander, Wellington; Iva Larson, Marjorie Prickett, Dr. Mary T. Harman, State College at Manhattan. From MASSACHUSETTS: Mr. and Mrs. Robert Emerson, Belmont. From MINNESOTA: Donald Fischer, Shakopee; Dr. A. M. Holmquist, St. Olaf College at Northfield; F. B. Hutt, University Farm; W. J. Breckenridge, University Museum; Selma Crow, University of Minnesota; Gustav Swanson, all of Minneapolis. From MISSOURI: L. M. Dougan, Burton H. St. John, St. Louis; Elizabeth Allen Satterthwait, Webster Groves; Prof. A. E. Shirling, Kansas City. From NEBRASKA: Miriam Roe, Chadron; Prof. C. C. Carlson, Doane College at Crete; Dr. Robert H. Wolcott, Dr. David D. Whitney, and Prof. Myron H. Swenk, University of Nebraska at Lincoln. From OHIO: Prof. E. L. Moseley, State Teachers College at Bowling Green; Dr. Lynds Jones, Oberlin College; Prof. James S. Hine, Ohio State University at Columbus. From OKLAHOMA: C. P. Freeman, A. & M. College, Stillwater. From PENNSYLVANIA: Charles Edward Mohr, Bucknell University at Lewisburg. From SOUTH DAKOTA: Prof. N. E. Hansen, State College at Brookings. From TENNESSEE: Edwin B. Powers, Knoxville; Dr. Wyman R. Green, Chattanooga University; Albert F. Ganier, P. E. Cox, State Archaeologist, Dr. John T. McGill, Vanderbilt University, Dr. Jesse M. Shaver, Peabody College, all of Nashville. From WISCONSIN: Mr. and Mrs. Ira Hatfield, Dr. Leon J. Cole, University of Wis-

consin at Madison. From IOWA: (outside of Des Moines): Mrs. H. J. Lambert, Dows; Kathryn Gilmore, Bloomfield; Carl Fritz Henning, Custodian Ledges State Park at Boone; J. Wilbur Dole, Fairfield; Leona Johnson, Gilman; Donald Douglas, Grinnell College at Grinnell; Dr. C. E. Ehinger, Keokuk; May Alice Smith, and Leslie Weetman, Indianola; May Pardee Youtz, Iowa City; O. P. Allert, McGregor; Prof. H. E. Jaques, Iowa Wesleyan College at Mt. Pleasant; Dr. Charles R. Keyes, Cornell College at Mt. Vernon; Althea R. Sherman, National, via McGregor; Charles J. Spiker, New Hampton, W. M. Rosene and Walter Rosene, Jr., Ogden; Alfred R. Stanley, Oskaloosa; M. Bourland, Shenandoah; Mrs. Max Levine, John Eide, Elsie Ann Guthrie, Harlan B. Mills, Mrs. John E. Smith, all of Ames; Prof. J. E. Guthrie and Dr. L. H. Pammel, Iowa State College at Ames; F. L. Kubichek, Coe College, Byron H. Evans, Gaynor Evans, Mrs. V. R. Evans, Lavinia Steele, Cedar Rapids; Ethel M. Hacekttt, T. C. Stephens, Morningside College, Mrs. Mary L. Bailey, Walter W. Bennett, R. O. Malcomson, William Youngworth, all of Sioux City; Dr. and Mrs. F. L. R. Roberts, Spirit Lake; Lottie V. Crouse, Valley Junction; J. W. Jones, Vinton; Mr. and Mrs. Fred J. Pierce, Winthrop; Mr. and Mrs. Arthur Goshorn, Winterset; Hazel Guthrie, Woodward. From DES MOINES: Dunbar Bair, Mrs. E. R. Baker, Florence Barr, Mr. and Mrs. A. N. Beim, B. J. Bleasdale, Olive C. Brandt, Mrs. R. G. Brenner, Miss Debra Brinton, Mrs. Ernest Brown, Mr. and Mrs. Harold A. Bruner, Marjorie Christian, Mrs. C. F. Christy, Floy Cook, Ada Coon, Charlotte Coon, Mrs. C. C. Donahue, Jean DuMont, Mr. and Mrs. W. G. DuMont, David DuMont, J. H. Dutton, Mrs. T. S. Farquharson, Harry Fensler, Carolyn E. Forgrave, Leta Fowler, Mrs. Henry Frankel, Miss Florence Froning, Mrs. A. B. Funk, Mr. and Mrs. O. E. Gilchrest, Jean Goodrich, Mrs. R. S. Herrick, F. R. Hubbard, Jr., Maude Hubbard, Charles Hutchinson, Helen Johnston, Mrs. C. Leslie Johnson, David T. Jones, Miss Helen Kamber, Edith C. Kimmell, Miss Kate LaMar, Miss Libbie Lang, Miss Ellice Langfitt, Belle Levey, Mrs. Ida Levey, Mr. and Mrs. Paul Love, W. E. Lyman, Paul and Max Lyon, Mrs. John Lyon, Miss Olivia McCabe, Mrs. Cole McMartin, Miss Fannie Malone, Dorothy Merritt, Mrs. A. S. Miller, Robert Hoehl, Russell Mott, Kenneth Nelson, Maxine Nelson, Mr. and Mrs. W. C. Nelson, Miss Elsa M. Neumann, Mrs. Arthur Neumann, Miss Prudence Nicholas, Mr. and Mrs. Arthur J. Palas, Addison Parker, Jr., Miss Hazel Peasley, Mrs. R. R. Peters, Ben K. Polk, Jr., Mrs. H. M. Purvis, Mrs. J. W. Rehmann, Miss Estelle Reynolds, Dr. Luther S. Ross, Miss Edna Rounds, Mrs. M. H. Rowe, Miss Ruby Sage, Miss Mamie St. George, Miss Mary M. Schell, Miss Viola H. Scheel, Fred O. Signs, Mrs. E. E. Stacey, Mrs. B. M. Stearns, Ray E. Sterrett, Mrs. Truman Stevens, Mr. and Mrs. John E. Stewart, Miss Anna K. Sutton, Mabel Conkling Thomas, Mrs. Louise I. Tower, Miss Frieda Troeger, Miss Irene Ullius, Miss Hazel Velie, Miss Margaret C. Walker, Mr. and Mrs. Leo Weeks, Alfred Wendelburg, Mrs. Toni R. Wendelburg, Miss Grace White, Mrs. Mary E. Winston, Unah Winston, Ethel Gay Wood, Miss Minnie Youngerman.

Summary of Attendance. Canada, 1; California, 1; District of Columbia, 2; Alabama, 1; Arizona, 1; Connecticut, 1; Illinois, 6; Indiana, 1; Kansas, 4; Massachusetts, 2; Missouri, 4; Minnesota, 6; Nebraska, 5; Ohio, 3; Oklahoma, 1; Pennsylvania, 1; South Dakota, 1; Tennessee, 6; Wisconsin, 3; Iowa (outside of Des Moines), 46; Des Moines, 106. Total, 202. Total outside of Des Moines, 96. Number at Dinner, 77.

REPORT OF THE SECRETARY FOR 1929

*Nashville, Tenn., December 26, 1929.

To the Officers and Members of the Wilson Ornithological Club:

The Wilson Ornithological Club finished its fiscal year in a fairly satisfactory condition as to membership and general activities.

Seventy-six new members have been added to our roll during the past year as follows: life member, 1; active, 17; associate, 58. These new members have the following state distribution: Alabama, 1; Arizona, 1; Arkansas, 1; California, 2; Connecticut, 1; District of Columbia, 1; Foreign, 3; Illinois, 13; Indiana, 1; Iowa, 7; Kentucky, 1; Massachusetts, 2; Michigan, 5; Minnesota, 3; Missouri, 3; North Carolina, 1; New Jersey, 1; New York, 2; Ohio, 12; Oklahoma, 1; Pennsylvania, 2; South Carolina, 1; Tennessee, 7; Texas, 2; Utah, 1; Wisconsin, 1.

The various members responsible for the applications of new members are as follows: Jesse M. Shaver, 26; T. C. Stephens, 14; J. W. Stack, 8; H. K. Gloyd, 8; Lynds Jones, 5; W. I. Lyon, 3; T. L. Hankinson, 2; Louis Campbell, 3; A. M. Bailey, 2; and five members, one each.

At present the total membership is 717, distributed among the following groups: honorary, 9; life members, 6; sustaining members, 60; active members, 245; associate members, 397.

During the year 35 members resigned, 4 were deceased, and 31 were dropped for non-payment of 1929 dues. Thus a total of 70 members were lost. The dropped members were distributed among the following groups. life member (deceased), 1; sustaining members, 3; active members, 18; associate members, 48.

Respectfully yours,

JESSE M. SHAVER, *Secretary.*

CONTRIBUTIONS TO THE SPECIAL COLOR PLATE FUND†

Clarence Bretch, Gary, Ind.	$10.00
Dr. Alvin R. Cahn, Urbana, Ill.	5.00
Dr. C. E. Ehinger, Keokuk, Iowa	5.00
Mrs. Margaret M. Nice, Columbus, Ohio	5.00
Prof. M. C. Quillian, Macon, Ga.	1.50
Hon. John E. Thayer, Lancaster, Mass.	25.00
Thos. H. Whitney, Atlantic, Iowa	5.00
Fred M. Dille, Valentine, Nebraska	1.00
Edward R. Warren, Colorado Springs, Colo.	1.00
Sidney K. Eastwood, Pittsburg, Pa.	1.00
E. D. Nauman, Sigourney, Iowa	2.00
Total	$61.50

*The statistics in the report are corrected to the end of the calendar year.
†Contributions received in December are not included here.

REPORT OF THE TREASURER FOR 1929

East Lansing, Mich., December 28, 1929.

Receipts for 1929

Cash in bank November 23, 1928	$527.18	
Sustaining dues	270 00	
Active dues	520.00	
Associate dues	484.50	
Libraries, Museums, Schools	69.00	
Two foreign subscriptions	4.00	
Total excess on checks	1.25	
Collection on back dues	126.71	
Sale of Bulletins to members	11.52	
Donations to color plate in March	61.50	
Exchanges through Oberlin College	18 00	
Exchanges through Dr. Jones	22.50	
1930 Associate dues	25.50	
1930 Active dues	7.50	
1930 Libraries, Museums, Schools	18.00	
Total income		$2,167.16

Disbursements for 1929

Printing four issues, Wilson Bulletin	$1,040.70	
Color plate work, March and September	181.20	
Halftones and zinc plates	145.14	
Addressing envelopes for Bulletin, 5 issues[1]	15.00	
Mailing Bulletins for 1928[2]	33.64	
5000 mailing envelopes for Bulletin	38.75	
Cost of publication		$1,454.43
Secretary's expense, postage, mimeograph, etc.		70.68
Treasurer's expense, postage, printing, etc.		70.75
Printing of general stationery		16.00
Transferred to Endowment Fund		25.00
Total disbursements		$1,636.86
Cash balance on hand		530.30
		$2,167.16
Endowment Fund, January 1, 1929		$534.08
Endowment Fund, December 26, 1929		720.25
Interest, June to January		12.07
		$732.32

The undersigned has examined the accounts of Professor J. W. Stack, Treasurer of the Wilson Ornithological Club, and finds them correct in every detail.

C. W. G. Eifrig, *Auditor.*

River Forest, Ill., January 30, 1930.

[1]This also includes $2.50 for making a copy of the mailing list for checking purposes.

[2]Including second class postage on Bulletins, foreign postage, postage due on returned copies, postage on each local delivery, parcel postage on manuscripts, photographs, etc.

The Program

The program is given below just as it was carried out, which varies slightly from the order in which it was announced in the program printed for the meeting.

Friday Morning, December 27, 1929

Mrs. J. E. Stewart, President of the Des Moines Audubon Society, welcomed the Wilson Ornithological Club to Des Moines in her own charming manner. On behalf of the Club Dr. Jones responded briefly.

1. Making Bird Sanctuaries of Public Grounds. (Lantern slides). Arthur J. Palas, Des Moines.

   By gift and purchase the city of Des Moines has acquired rather extensive tracts of land around its water-works and bordering the Raccoon River; this area is kept as a bird sanctuary. To a great extent this enterprise is due to the energy and foresight of the Des Moines Audubon Society, and especially to its president, Mrs. J. E. Stewart. For the most part, this area is left in its native and undisturbed condition, providing excellent shelter for birds. Since, in the nature of the case, water-works property must be carefully supervised, it usually makes excellent bird sanctuary. In this particular case, we may judge from the beautifully colored pictures that this area contains much picturesque scenery.

2. Correlation between the Blooming of Flowers and the Migration of Hummingbirds. Prof. L. H. Pammel, Iowa State College, Ames.

   Literature, personal observations, and data gathered from others by correspondence were summarized as to the kinds of flowers visited by Hummingbirds (*Archilochus colubris*), and as to the time of year of the visits. The general conclusion was drawn that the ruby-throats leave for the south at approximately the time when hummingbird flowers are killed by the frost. The flowering season of "hummingbird flowers" usually co-incides with the period of residence of the Ruby-throated Hummingbird. Additional data will be welcomed.

3. Nesting of the Duck Hawk in the Great Smoky Mountains. (Lantern slides). Albert F. Ganier, Nashville, Tenn.

   The excursion leading to the discovery of the nest and eggs of this relatively rare falcon was described with absorbing interest. Excellent pictures showed the difficult and perilous climb to the site of the nest, the nesting cliff and surrounding environment, the nest and eggs in situ, and the old bird in flight.

4. The Chemistry of a Bird's Nest. Althea R. Sherman, National, Iowa, and Burton H. St. John, St. Louis, Mo.

   A brief statement of the manner of placing and gluing the first sticks onto the chimney wall by the Chimney Swift was followed by a report on some analytical work on the nature of this secretion. It was found to be "an acid glucoprotein (protein combined with carbohydrates), being comparable in composition, as shown by the analysis, and in most of its characteristics, with known mucins such as those found in snails and the submaxillary gland, but differing from them and sharing a property of the keratins in lack of digestibility by either pepsin or trypsin." A peculiar property of this secretion is its ability to harden rapidly when exposed to the air. This analysis was compared with that of various natural proteins. The paper was read by Mr. St. John.

5. Some recent Iowa Bird Notes. C. E. Ehinger, Keokuk, Iowa.

   Dr. Ehinger presented observations on: 1) the effects of a bridge and dam across the Mississippi River on the migration of water birds, 2) a great autumn migration of Lesser Snow Geese, Double-crested Cormorants, Coots, Lesser Scaup Ducks, Teal, and Golden-eyes, 3) the presence of Redpolls

as late as December 18 at Keokuk, of Starlings at Warsaw, Illinois, of Western Meadowlarks in southeastern Iowa, and of nesting Mockingbirds near Keokuk, and 4) the abundance of the Yellow-breasted Chat in favorable localities near Keokuk.

6. Mallophagan Parasites on some of our Common Birds. R. O. Malcomson, Sioux City, Iowa.

Lantern slides and microscope slides were used in describing these common parasites of birds. Many of the parasites studied by Mr. Malcomson were obtained from long-preserved bird skins. Some of the parasites mounted on microscope slides were projected by lantern on the screen, including two new species recently described and named by Mr. Malcomson.

Friday Afternoon, December 27, 1929

7. Studies at the Nests of our Larger Owls. (Lantern slides). W. M. Rosene, Ogden, Iowa.

Camera studies of the nesting sites, young, and adults of several species of the larger owls, particularly the Barred and Great Horned Owls. A careful study of the food found in the nest of a pair of Barred Owls in two successive years revealed some very interesting facts concerning their economic status. This nest was visited almost daily for a period of about six weeks.

8. Seasonal, Cyclic, and Permanent Fluctuations and Decrease in the Number of Certain Species of Birds. C. W. G. Eifrig, River Forest, Illinois.

This paper shows how unusual scarcity or superabundance of certain species some years is due to the fact that the migration of birds proceeds in waves. If the night flight of a large army of migrants starts not far to the south of the observer, it may miss the region entirely, with the consequent dearth of certain species in that area for that year. Or, if the army starts far enough south of the observer's region, the whole wave may come down there, with the consequent abundance of the same species. Cyclic and permanent decrease may be due to one or more of several causes, such as the changes wrought by man's civilization, draining of swamps, deforestation, unfavorable or destructive weather conditions, excessive shooting, the introduction of foreign species, mishaps and catastrophies during migration, disease, and the depredation of the Cowbird.

9. Some Birds of the Rocky Mountain National Park. (Lantern slides). A. E. Shirling, Teachers College, Kansas City, Mo.

Excellent photographs of nesting Cliff Swallows, the Mountain Bluebird, and other birds which inhabit this region.

10. The Relation of Temperature to the Time of Ending of the Evening Song of the Mockingbird. (Lantern slides). Jesse M. Shaver and Miss Gladys Walker, George Peabody College for Teachers, Nashville, Tenn.

The relations *between* daily maximum, minimum, and mean temperatures, *and* the time of ending of the Mockingbird's evening song were examined statistically. Similarly, the temperature at the exact time of the song ending and normal temperature were studied in their relation to this song ending. It was found that all these classes of temperature were significant but no one kind of temperature possessed any virtue over another. Correlation coefficients were .50+.06. Change of temperature was not important. In general, the Mockingbird sang later on warm days and stopped earlier on cold days. Presented by Mr. Shaver.

11. Why the Variation in Color of the Iris of Brown Thrashers? Elizabeth Allen Satterthwait, Webster Groves, Mo.

During several seasons of trapping Brown Thrashers for banding purposes, notes have been taken on the color of the iris. It was found to range from dark brown in nestlings to light carbon gray in birds out of the nest.

These differences in iris color are apparently not related to sex. The question may be asked: Are they not related to the age of the bird? The suggestion was made that the very light gray iris occurs in the young bird, and later gives way successively to an iris of various shades of yellow.

12. The Abundance of Marsh Birds south of Lake Erie in 1929 due to High Water. E. L. Moseley, State Teachers College, Bowling Green, Ohio.

During several years prior to 1929 the water level of the Great Lakes was so low that marshes adjacent had become too dry for the proper development of wild rice, tape grass, bladderwort, *Potamogeton*, and other important sources of food for marsh birds. Because of the opening of the locks at Sault Ste. Marie from August to December, 1928, and heavy precipitation then and in 1929, the water level became three feet higher in May than it was in the spring of 1926. This caused a luxuriant growth of food plants in the marshes, and also made it difficult for four-footed prowlers to get to the nests of aquatic birds. Consequently, many more rails, gallinules, coots, ducks, and other marsh birds were hatched and reared there than in previous years. Of certain speces even old time hunters could not recall having seen such large numbers before.

13. Bird Banding as a Method of Bird Study. Wm. I. Lyon, Waukegan, Illinois.

A brief statement of some of the work accomplished by various bird banders in the central states, and a plea for greater co-operation among bird students in this activity.

14. Some New Birds of Yellowstone National Park. Emerson Kemsies, Oberlin, Ohio.

A list of hitherto unrecorded birds observed during the summer of 1929. In the author's absence the paper was read by Dr. Jones.

Saturday Morning, December 28, 1929

15. Breeding of the Least Tern at Sioux City, Iowa. William Youngworth, Sioux City, Iowa.

The author describes the discovery of the nesting of the Least Tern on a sandbar in the Missouri River opposite Sioux City, in the summer of 1929.

16. The Sequence of Molt in Birds. (Charts). Lynds Jones, Oberlin, Ohio.

The sequence of feather loss in birds was described with special reference to the feather tracts, and the Bobolink was used as a standard for comparison.

17. The Laying Cycle in the House Wren. (Lantern slides). L. J. Cole, University of Wisconsin, Madison, Wisconsin.

Birds may be classified as determinate with respect to egg production when they lay a definite number of eggs in a set, and indeterminate when they can be induced to continue laying by egg removal. The dove is an example of the determinate class, and the Flicker of the indeterminate class. Eggs presumably from the same female House Wren were removed daily and the wren thus induced to lay an unusually large number of eggs. These eggs were measured and studied as to volume, breadth, and length, and examined as to degree of pigmentation. Length increased in general to a certain point, then rested, then increased to a second high point, then rested, and for a third time increased to a high point; following this there was a downward trend. Thus, there appeared to be four cycles, separated by rest periods. A bird of the intermediate type normally lays a relatively definite number of eggs and then stops if undisturbed. If, however, the eggs are removed as laid, the number may be much larger. How is it possible for the bird to limit the number of eggs in the former case but not when they are removed? It is suggested that it may be that the process of incubation reacts upon the endocrine glands to cause cessation of egg production.

18. The Old Ornithology and the New. Althea R. Sherman, National, Iowa.

This paper is published in full in this issue.

19. The Crown Sparrows of the Middle West. (Colored plates). Myron H. Swenk, University of Nebraska, Lincoln, Nebraska.

The A. O. U. Check-list recognizes four species of crown sparrows (*Zonotrichia*), viz., Harris's, White-crowned, Golden-crowned, and the White-throated. Gambel's Sparrow is regarded as a subspecies of the White-crowned Sparrow. Its breeding range, however, overlaps that of the White-crowned in the northern Rocky Mountains, and no definite intergradation seems to have been demonstrated. The two are, therefore, regarded as distinct species. Their breeding and wintering ranges and songs were discussed. The Gambel's Sparrow is shown to move northward considerably before the White-crowned along the foot-hills, but with or after it along the Missouri River. The term *peripheral lag* is proposed for the slowing up of the migratory movement of any bird toward the peripheries of its migrational path, and illustrations were given from this group. The relative migratory movements of Harris's, White-crowned, Gambel's, and White-throated Sparrows in Nebraska were given.

20. Some Notes on Banding Chimney Swifts. (Lantern slides). Wyman R. Green, University of Chattanooga, Chattanooga, Tenn.

Traps and methods of handling Chimney Swifts in wholesale numbers were described and illustrated. During 1928 and 1929 a total of 3,737 swifts were banded, while 8,914 additional swifts which had been trapped were released unbanded for lack of bands. Fifty-four swifts previously banded by the author at Chattanooga and sixteen banded elsewhere were re-trapped.

Saturday Afternoon, December 28, 1929

21. Some Water Birds at Home. (Lantern slides and motion pictures). W. F. Kubichek, Coe College, Cedar Rapids, Iowa.

The author gave the results of several seasons of work on a chain of lakes in the "Waubay Region" of South Dakota. On Rush Lake four species of grebes were found nesting, viz., the Pied-billed, Eared, Holboell's, and the Western. Gulls, cormorants, terns, and shore-birds nested on an island in Waubay Lake. The author also discussed the influence on bird life of the construction of a road which dammed the outlet of one lake, causing it to seek an outlet through other lakes. An abundance of pictures helped to tell the story.

22. Life History of the Golden Eagle in Scotland. (Motion pictures). A. F. Ganier, Nashville, Tenn.

These wonderful movies of two tame Golden Eagles were taken by Captain Charles W. R. Knight, and were shown at this meeting through the courtesy of Dr. H. S. Vaughn, of Nashville. Slow motion pictures showed the difference in technique when stooping for prey and when alighting on a man's arm.

23. Some Feeding Habits of Birds. (Motion pictures). Walter W. Bennett, Sioux City, Iowa.

Three species of birds were shown in feeding acts. A captive Ruby-throated Hummingbird was shown feeding on sugar syrup from various vessels. After the starved bird had regained its strength by these artificial feedings it was set free. A pair of Pine Siskins which nested in Sioux City were shown in fine form feeding their young by apparent regurgitation. One bird fed the other adult on the nest, the latter passed the morsel on to the nestling. The feeding process as practiced by Cedar Waxwings made up the last exhibit.

24. Some Southern Bird Colonies. (Motion pictures). Herbert L. Stoddard, United States Biological Survey, Washington, D. C.

Snowy Egrets and juvenile Little Blue Herons were shown following cattle, horses, and pigs in Leon County, Florida, and feeding on animal life

in the grass. This habit, which is well known in the small herons of Africa, Asia, and some other countries of the world, has apparently never been previously noted for the New World Herons. These films also included wonderful close-up views of the Wood Ibis and various other species.

25. The Birds of Manitoba. (Lantern slides). V. W. Jackson, University of Manitoba, Winnipeg, Canada.

The author showed an interesting collection of still pictures of bird life, many of which were unusually fine.

26. Nesting Habits of the Loon. (Motion pictures). Owen J. Gromme, Milwaukee Public Museum, Milwaukee, Wisconsin.

These wonderful close-up moving pictures of a pair of wild Loons are the same as the ones seen at our last Chicago meeting, but it was very largely a different audience which saw them at this meeting. The pictures were made at Bass Lake, in Michigan, just across the Wisconsin line. As soon as the young Loons were hatched they accompanied their parents to the open water. Now, the pictures of the whole family on the open water are wonderful. The old birds are shown feigning injury in frantic efforts to attract the intruders away from the young birds.

Saturday Evening, December 28, 1929

27. Bird Colonies on the West Coast. (Motion pictures). Lynds Jones, Oberlin College, Oberlin, Ohio.

These pictures dealt mainly with various colonies of water birds along the Pacific Coast.

28. Notes on the History of the Heath Hen. (Motion pictures). T. C. Stephens, Morningside College, Sioux City, Iowa.

These motion pictures of the Heath Hen were shown through the courtesy of Mr. Arthur L. Clark, National Sportsman, Boston, Mass. The pictures were taken several years ago while these birds were still present in some numbers on Martha's Vineyard Island. After the last bird is gone, which may now, we will all try to figure out how it happened.

The following additional papers were read by title, owing to the absence of the authors: most of the manuscripts are in hand, however, and will be published in the BULLETIN:

29. Do Birds Usually Change Mates for the Second Brood? Mrs. Margaret M. Nice, Columbus, Ohio.

30. A Summary of the Birds of Polk County, Iowa. Philip A. DuMont, American Museum of Natural History, New York, N. Y.

31. The Economic Importance of Birds as Insect Predators. C. N. Ainslie, U. S. Bureau of Entomology, Sioux City, Iowa.

32. Experiences with Song Sparrows in 1929. Mrs. Margaret M. Nice, Columbus, Ohio.

33. Fall Migration of Mourning Doves. William Brewster Taber, Jr., Kansas, Illinois.

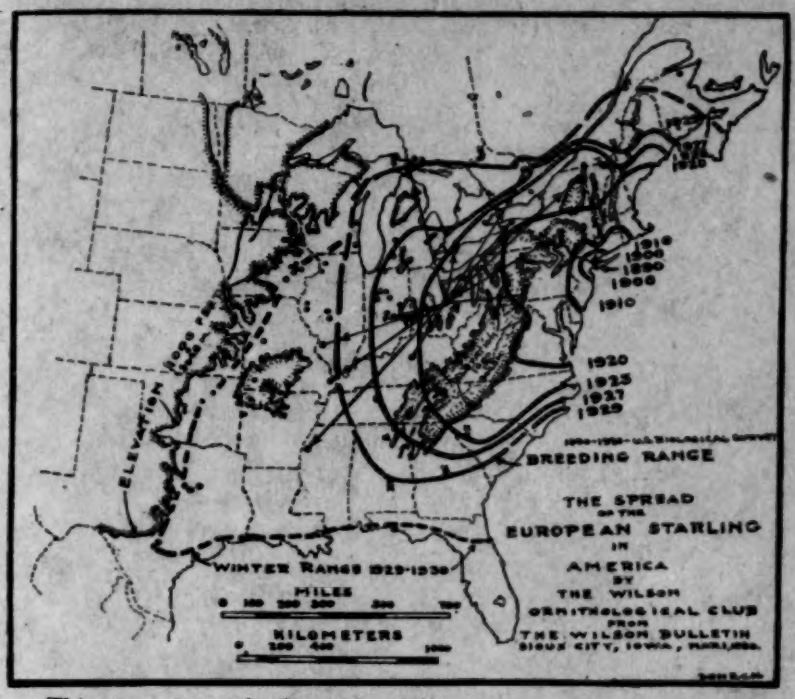
34. The Black-crowned Night Heron in Southern Michigan. T. L. Hankinson. State Normal College, Ypsilanti, Michigan.

35. Mockingbird Methods. Frank F. Gander, O'Rourke Zoological Institute, San Diego, California.

36. The Relation of Light to Time of Ending of the Evening Song of the Mockingbird and of the Robin. Jesse M. Shaver and Miss Ruby Walker, Nashville, Tenn.

SPREAD OF THE EUROPEAN STARLING IN AMERICA

BY E. C. HOFFMAN, LAKEWOOD, OHIO



This map is made from the following sources of information: The new boundary line for January-February, 1930, is drawn chiefly from data furnished by members of the Wilson Ornithological Club. Other sources are: National Parks of Canada; the Canadian Field Naturalist; the Auk; Bird-Lore; Oologist; the government of Mexico; the U. S. Biological Survey; the U. S. Geological Survey. The dispersal lines from Columbus, Ohio, are made from banding data supplied by Mr. E. S. Thomas

Recent investigations in England (see "British Birds" for November and December, 1929) have indicated that elevation of land has an influence on the distribution of the Starling. The 1000-foot contour line on the map seems to be approximately parallel to the 1929-30 winter range frontier line of the Starling in America. The breeding range indicated for 1929 is conservative, as several records are known beyond this line, as shown. The broken line in Illinois indicates incomplete or uncertain knowledge. Further information as to the extension of this species westward and southwestward is solicited.

Annual Meetings of the Wilson Ornithological Club

	Retiring President
1914—Chicago. February 5. Chicago Academy of Sciences.	
1914—Chicago. December 29-30. New Morrison Hotel	T. C. Stephens
1915—Columbus. December 28-29. With the A. A. A. S.	T. C. Stephens
1916—Chicago. December 27-28. New Morrison Hotel	T. C. Stephens
1917—Pittsburgh. January 1-2, 1918. With the A. A. A. S.	W. F. Henninger
1918—No meeting on account of the exigencies of war	M. H. Swenk
1919—St. Louis. December 29-30. With the A. A. A. S.	M. H. Swenk
1920—Chicago. December 27-28. With the A. A. A. S.	R. M. Strong
1921—Chicago. December 26-27. The Field Museum	R. M. Strong
1922—Chicago. October 26	T. L. Hankinson
1923—Cincinnati. Dec. 31, 1923-Jan. 1, 1924. With the A. A. A. S.	T. L. Hankinson
1924—Nashville. November 28-29-30. Peabody College	A. F. Ganier
1925—Kansas City. December 28-29. With the A. A. A. S.	A. F. Ganier
1926—Chicago. November 26-27. Chicago Academy of Sciences	A. F. Ganier
1927—Nashville. Dec. 30, 1927-Jan. 1, 1928. With the A. A. A. S.	Lynds Jones
1928—Ann Arbor. Nov. 31-Dec. 1, 1928. Museum of Zoology	Lynds Jones
1929—Des Moines. December 27-28. With the A. A. A. S.	Lynds Jones